SCIENCE ABSTRACTS.

INDEX TO VOL. XXVIII.

1925

SECTION A.—PHYSICS.

Price 3s. or 75 cents net.

(Free to Annual Subscribers.)

LONDON:
E. & F. N. SPON, LTD., 57, HAYMARKET, S.W.1.

NEW YORK:
SPON & CHAMBERLAIN, 120, LIBERTY STREET.

NAME INDEX.

SECTION A.—PHYSICS.

[*The numbers refer to Abstracts; if the letter B follows a number the Abstract will be found in Section B under that number. An asterisk indicates remarks in a discussion.*]

Abadie, thermo-junction galvanometer system, 2154
Adair, G. S., osmotic pressure, 2209
Adam, N. K., surface films on water, 1236
Adam, N. K., & J. W. W. Dyer, thin films, 998
Adam, N. K., & G. Jessop, negative surface tension, 2384
Adams, L. H., earth temperatures, 810; thermostats, 389
Adams, W. S., & C. E. St. John, convection currents in stars, 498
Agte, K., H. Schönborn & K. Schröter, tungsten powder, 2435
Ahmad, N., γ-rays, 2532
Ainslie, D. S., lithium red line, 863
Akishino, Y., K. Yamazaki & K. Terazawa, aeronautical kinematographs, 548
Akiyama, M., α-particles, 141; recoil of radio-active atoms, 142
van Albada, L. E. W., wide-angle stereoscope, 528
Albenga, G., static calculation of aeroplanes, 268
Albersheim, W., oscillation hysteresis, 433B
Alberti, E., & E. Giebe, wavemeter, 1969
Alberti, E., & A. Güntherschulze, "Silit" resistances, 1476
Albrecht, E., & M. Dorneich, photometer, 2674
Alden, H. L., & P. van de Kamp, faint stars, 56; tenth magnitude stars, 506
Alden, H. L., & S. A. Mitchell, Pleiades, 2053
Aldis, J. A., organ-pipes of unusual shapes, 170
Alexander, L. M., N of Avogadro, 1752
Alexandrow, W., gravitational field, 2232
Allen, F., colour contrast, 515
Allen, H. S., helium, 792; magnetic tubes, 1976
Allen, R. P., & W. D. Bancroft, metallic lustre, 2063
Allis, W. P., Hertzian resonator, 405
Allison, S. K., reflection of X-rays, 578
Allison, S. K., G. L. Clark & W. Duane, secondary X-ray spectra, 576
Allison, S. K., & W. Duane, scattered radiation due to X-rays, 1405
Allmand, A. J., & A. N. Campbell, electrodeposition of manganese, 1278
Allmand, A. J., & V. S. Puri, superposed alternating current, 2799; zinc-sulphuric acid-carbon primary cell, 1262
Altberg, W., & M. Holtzmann, absorption of sound waves, 1156
Alter, D., Schuster's periodogram, 804
Alty, T., cataphoresis, 242
Amberg, fusion of graphite, 1432*
Ames, A., Jr., depth illusion, 1338
Anderson, J. P., F. F. S. Bryson & A. J. Dalladay, micro-camera, 1621
Anderson, R. J., & G. M. Enos, brass corrosion, 979
Anderson, R. J., & E. G. Fahlman, internal stress, 758
Anderson, S. H., phonodeik, 2733
Anderson, S. H., & G. G. Kretchmar, tungsten arc, 2741
Anderson, W., cosmic dust, 310; Huyghens' principle, 1349; solar corona, 2247
Anderson, W. T., Jr., & F. W. Robinson, ultra-violet radiometer, 1634
Andrade, E. N. da C., & J. W. Lewis, fluid motion, 252
Andrade, J., synchronisation, 1544
André, H., silver electrodes with a.c., 2635
Andrews, D. H., & J. Johnston, metal equilibrium diagrams, 697
Andrews, J. P., Young's modulus, 1799
Andrews, J. W., W. H. Rodebush & J. B. Taylor, temperature-entropy diagrams, 1437
Andrews, W. S., fluorescence and phosphorescence, 2688; luminescence, 1022B

Andronescu, P., two-dimensional and axially symmetrical fields, 1488
Angenheister, G., earth's magnetic field, 1741
Anslow, Gladys A., total ionisation in air, 1952
Anthony, J. D. C., & L. J. Hudleston, freezing-points of hydrofluoric acid, 2316
Antoniadi, E. M., Mars, 62, 63
Antoniadi, E. M., & F. Baldet, Mars, 513
Antonoff, G. N., molecular interaction, 2126; surface-tension, 260
Aoyama, S., separation of platinum and iridium, 445
Appell, P., celestial motion, 311; non-holonomous system, 18
Appleby, M. P., & P. G. Davies, aniline, 2409; osmotic pressure, 2410
Appleton, E. V., comparison of frequencies, 1970*
Appleton, E. V., K. G. Emeléus & M. A. F. Barnett, α-particle counter, 145
Arena, J. P., & J. Wagner, reactivity of coke, 463
Arens, H., photographic reversal phenomena, 1077
Arkadiew, W., electric and magnetic spectroscopy, 2350; electromagnetic waves, 197
Armellini, G., & G. Armellini-Conti, moon, 1047
Armellini-Conti, G., & G. Armellini, moon, 1047
Armes, H. P., & M. A. Parker, chemical reactions influenced by magnetic field, 1257
Armstrong, Alice H., W. Duane & R. J. Havighurst, reflection of X-rays, 1907
Armstrong, Alice H., W. Duane & W. W. Stifler, secondary X-ray spectra, 575
Arnaud, J. J., & I. C. Gardner, image curvature, 1058
Arnulf, A., ionisation of potassium vapour, 1953
d'Arsonval, & J. Perrin, 500,000-volt d.c. generator, 1981
Arstal, A., & S. Bodforss, perborates of electrolysis, 1266
Aschenbrenner, C., topography, 2261
Astbury, W. T., & Kathleen Yardley, 230 space-groups by homogeneous X-rays, 25
Aston, F. W., atoms and isotopes, 476; mass rays, 1622; mass-spectra, 1883; mass spectra of zirconium, etc., 123
Athanasiu, G., actinometers, 1525, 2672; monochromatic illuminator, 1619
Atkinson, E. J., vector-trolley, 2408
Atkinson, L. B., artificial incubation, 621
Atkinson, R. d'E., Vegard's theory of aurora, 362
Audibert, E., mining explosives, 452; safe firing of blasting charges, 453
Audubert, R., electro-chemical deposits, 726; latent image, 923; photovoltaic phenomena, 206
Audubert, R., & Marguerite Quintin, adsorption of ions, 1758
Auger, P., photoelectric effect, 2718; photoelectrons, 2340; secondary β-rays, 1124
Auger, V., (Miss) L. Lafontaine & C. Caspar, salts of cupferron, 1521
Austin, L. W., field intensity measurements, 676
Austin, P. C., & V. A. Carpenter, rotatory dispersion, 337
Awerbuch, A., G. Falk & M. Centnerszwer, lead carbonate, 1522
d'Azambuja, L., solar surface, 1039

Baade, W., Pleiades, 1585
Back, E., neon Zeeman-effect, 1099; Zeeman-effects, 2501
Badger, R. M., free energy of hydrogen cyanide, 447
Bäcklin, E., K_α 1, 2 doublet, 2520
Bäcklin, E., M. Siegbahn, R. Thoraeus, L. de Broglie & A. Dauvillier, X-ray spectrum, 1905
Bär, R., abnormally low-voltage arc, 1449
Baerwald, H., electron reflection, 2136
Bahlke, W. H., & R. E. Wilson, corrosion, 1984
Bailey, C. R., condensed ternary system, 2789
Baillaud, J., stellar spectrophotometry, 1027
Baker, E. A., photographic blackening, 1862
Baker, E. M., & R. Schneidewind, metal cleansing, 1252
Baker, T. T., photographic spectrum analysis, 1644
Bakker, G., capillary layer, 616
Balandin, A., contraction constants, 2184
Baldet, F., carbon band-spectra, 1708
Co spectrum, 1111; spectrum of comet's tails, 1608
Baldet, F., & E. M. Antoniadi, Mars, 513
Baly, E. C. C., & R. W. Riding, helium and neon, 2749
Banachiewicz, T., cometary orbits, 1600
Bancroft, W. D., colloidal chemistry, 2174; corrosion, 1984; gas films, 1230; molecular weight, 2770
Bancroft, W. D., & R. P. Allen, metallic lustre, 2063
Banerji, S. K., earthquake focus, 1023
Bangham, D. H., & F. P. Burt, sorption of ammonia by glass, 1499
Bangham, D. H., & W. Sever, gas-sorption, 1983
Barbaudy, J., boiling-points of water-benzene-alcohol mixtures, 2313
Bardet, J., & C. Toussaint, celtium, 2616

Bardwell, D. C., & S. C. Lind, radon, 136
Barkhausen, H., & G. Lewicki, ear, 622
Barkla, C. G., J Phenomena in X-rays, 365, 2525
Barkla, C. G., & S. R. Khastgir, scattered X-rays, 1116
Barlow, E. W., upper air circulation, 1579
Barlow, G., & H. B. Keene, electrical contacts, 1735 ; radium tubes, 1419
Barnett, M. A. F., E. V. Appleton & K. G. Emeléus, α-particle counter, 145
Barnett, S. J., & L. J. H. Barnett, magnetisation by rotation, 2611
Barot, J., glass plates, 325 ; kinematography, 1075
Barratt, S., absorption spectra, 2511
Barratt, T., & R. M. Winter, thermal conductivity, 1424
Barré & Schnell, sound waves in the earth, 2327
Bartels, H., quantum orbits, 2022
Barton, H. A., ionisation of argon, 1951
Barus, C., cylindrical air column, 2328 ; diffusion of hydrogen U-gauge, 781
Bassett, W. H., & H. A. Bedworth, corrosion, 1984
Bastings, L., decay of radium E, 587 ; radium emanation, 1673
Bateman, H., new electrostatics, 1162
Bateman, H., & P. Ehrenfest, electromagnetic fields, 632
Bates, L. F., α-particles in rare gases, 376
Batuecas, T., compressibility, 2208 ; compressibility of methyl ether, 3 ; density, 2201
Baudisch, H., molecular rotation, 767
Baudisch, O., & L. A. Welo, transformation of magnetite, 2393
Bauer, L. A., atmospheric electricity, 1169 ; terrestrial magnetism, 1222
Bauer, L. A., & J. A. Fleming, terrestrial magnetism, 1221
Bauer, L. A., & W. J. Peters, terrestrial magnetic disturbances, 2602
Bauer, O., & O. Vollenbruck, copper-tin alloys, 703
Baxter, G. P., & H. W. Starkweather, density of oxygen, 734
Baxter, W. P., & A. A. Noyes, ionised solutes, 2771
Bayen, spark-spectra of tungsten and mercury, 1103
Bayley, C. H., & M. C. Boswell, inhibition of catalytic action, 1260
Bayley, P. L., colouration by X-rays, 581
Beams, J. W., Jr., & F. L. Brown, spectrum lines, 2503
Bean, D., logarithmic decrement of pendulum, 1300
Beans, H. T., & L. P. Hammett, hydrogen electrode, 1996
Bearden, J. A., & A. H. Compton, scattered X-rays, 1403
Beattie, J. A., application of the phase rule to galvanic cells, 457
Beattie, J. A., & F. G. Keys, calorimeter, 154
Bechert, K., & M. A. Catalán, cobalt spectrum, 2092
Bechert, K., & L. A. Sommer, arc spectrum of Ni, 2702 ; vanadium spectrum, 1389
Beck, C., whole sky camera, 1059
Beck, G., gravitational fields, 2441
Becker, A., electron emission, 928 ; kathode rays, 190
Becker, E., aneroid barometers, 249
Becker, E., & H. Hilberg, passive state of metals, 1245
Becker, H. G., gas absorption, 687
Becker, J. A., Compton and Duane effects, 574 ; soft X-rays, 583
Becker, K., & F. Ebert, crystal structure, 1319
Becker, R., equipartition of energy, 619 ; ionisation, 186 ; plasticity, 2211
Bedreag, C. G., physical system of the elements, 291, 1548
Bedworth, H. A., & W. H. Bassett, corrosion, 1984
Bedworth, R. E., & N. B. Pilling, corrosion, 1984
Beekley, J. S., & H. S. Taylor, adsorption, 2766
Beekman, W. J., & F. Oudt, blackening curves, 551
Beekman, W. J., & F. W. Oudt, reflecting power, 2664
Beets, H. N., cleavage face angle, 1814
Beets, H. N., A. H. Compton & O. K. De Foe, grating space, 1815
Béhounek, F., radio-active thermal spring, 1676
Behrens, W. U., & C. Drucker, specific heats, 595
Belaiew, N. T., pearlite, 2221
Belcher, D., electrolytic iron, 986
Bell, G. E., fall of spheres into liquids, 12 ; impact, 1305
Bell, G. E., & F. Y. Poynton, dielectric constants, 1964
Bell, H., CuH molecule, 1098
Bellia, C., Hall and Corbino effects, 201
Belot, E., comets, 2040 ; vortex motion, 993
van Bemmelen, W., earth's magnetisation, 1740
Benedicks, C., & G. Phragmén, throttle cross, 2354
Benedicks, C., & P. Sederholm, invar, 2589
Bengough, G. D., & R. May, corrosion, 690
Bengtsson, E., & E. Svensson, silver bands λ3330 and λ3358, 1110
Benndorf, H., atmospheric electricity, 1168
Bennett, A. H., long focus anastigmatic objectives, 526
Bennewitz, K., elastic after-working, 1
Benson, H. K., J. S. Herrick & T. Matsumoto, Portland cement, 699

Benton, W. A., underblown pipes, 1157*
Benton, W. E., organ pipes, 627, 628
Bérenger, (Miss), & A. Tian, heats of solution, 2320
Berg, E. J., Heaviside's operators, 352B
Berger, F., electric spark discharge, 1944
Berger, J., van der Waals' equation of state, 167, 2127
Berglund, V., & G. Hevesy, zirconium and hafnium, 244
Bergstrom, F. W., electronegative potential series, 2195
Berkmann, Sophie, & N. Isgarischew, polarisation in metal deposition, 1783
Berliner, J. F. T., & O. E. May, vapour-pressure, 2728
Bernal, J. D., graphite, 471
Bernhardt, F., saturation pressures of mercury, 1923
Berthold, R., X-rays of various wave-lengths, 1416
Berthold, R., & R. Glocker, X-ray intensities, 1413
Besnerais, L., & Ferrier, new electro-magnetic law, 1444
le Besnerais, M., & R. Ferrier, ether, 1327
Beth, H. J. E., instable equilibrium, 1807; stabilisation of unstable equilibrium, 1308
Betz, O., laminated iron, 2605
Bethenod, J., Mesny's polyphase generator, 1805B
Bhargava, S., & R. N. Ghosh, pianoforte hammer, 997
Bhatnagar, S. S., M. Prasad, N. G. Mitra & D. L. Shrivastava, resistance films, 2752
Bhatnagar, S. S., & D. L. Shrivastava, optical inactivity, 344
Bialobjeski, T., true absorption of light, 542
Bialobrzeski, C., absorption of light, 1333
Bichowsky, F. R., quanta, 2443
Bickley, W. G., hole in bent plate, 275
Bielz, F., mean free path, 1552
van Biesbroeck, G., & O. Struve, asteroids, 508
Bigourdan, G., hourly signals, 1024; time service, 243
Bijvoet, J. M., A. Karssen & N. H. Kolkmeijer, crystal structure, 282
Birchby, W. N., interference fringes, 823
Bircumshaw, I., & W. Hardy, boundary lubrication, 2414
Bjerknes, J., mountain observations, 1016
Bjerknes, V., cyclones, 490; forces which support aeroplanes, 773; polar front meteorology, 2450
Black, D. H., β-ray spectrum of meso-thorium 2, 378; liquid sulphur, 937
Blackburn, C. M., Deslandres' first negative group of carbon, 1406
Blackburn, C. M., & H. B. Lemon, quantum transitions, 2689
Blacket, P. M. S., ejection of protons, 1680
Blair, G. W. S., dilute gelatine gels, 1240
Blake, F. C., X-ray measurements, 2516
Blanc, L., & G. Chaudron, iron and chromium magnetic properties of sesquioxides, 1219
le Blanc, M., & M. Kröger, solid electrolytes, 2405
Blankenstein, F., & K. Scheel, specific gravity of mercury, 1785
Blau, M., decay constant of RaA, 1420
Bleeker, C. E., & I. A. Bongers, flame spectra, 122
Bloch, emulsion fog, 1637*
Bloch, E. & L., & G. Déjardin, neon spark spectrum, 1652; spark-spectra of argon, krypton and xenon, 853
Bloch, L., & E. Bloch, iron spark spectra, 854; spark spectra, 2500; spark spectrum of tungsten, 1104
Bloch, (Miss), & J. Guillaume, lunar eclipse of August 14, 1924, 59
Block, W., laboratory balances, 2000
Blondel, A., hysteresis coefficients, 2607; photometer, 2673; Rayleigh photometer, 2480
Blumer, H., radiation diagrams, 1850
Blunck, R., & P. P. Koch, Debye-Scherrer-Ringen, 2682
Boccardi, J., latitude variation, 509; planets, 2059
Bock, H., chronometer spirals, 254; period of pendulum, 272
Bock, R., dielectric constant of glycerine, 1478
Bockstahler, L. I., specific heat of incandescent tungsten, 1921
Bockstahler, L. I., & K. K. Smith, specific heats of metals, 596
Bodenstein, fusion of graphite, 1432*; hydrogen overvoltage, 724*
Bodenstein, M., dissociation of bromine molecule, 236
Bodenstein, M., & J. Franck, inelastic atomic and molecular impact, 2389
Bodenstein, M., & H. Lütkemeyer, hydrogen bromide, 831
Bodforss, S., hydrazine, 239
Bodforss, S., & A. Arstal, perborates by electrolysis, 1266
Bodin, E., cells producing radiations, 2078
Bodócs, S., geometrical optics, 87
Bois, (Miss) Dammann, (Miss) Hée, Lacoste & Rothé, Oppau and La Courtine explosions, 906
Bollnow, F., crystal structure, 2437
Bonacina, L. C. W., polar front meteorology, 2450*; warm Polar climates, 1835*
Bonanno, P., elastic distortions, 264, 266
Bond, W. N., sub-harmonics, 1441
Bone, W. A., D. M. Newitt & D. T. A. Townend, gaseous combustion, 2403
Bongards, H., radio-active disintegration products in atmosphere, 1128

Bongers, I. A., & C. E. Bleeker, flame spectra, 122
Bonhoeffer, K. F., Wood's active hydrogen, 709
Bonin, Reynaud-, E., non-sulphating accumulator, 714
Borelius, G., conduction of electricity, 2351
Born, M., & J. Franck, formation of molecules, 1323; heat of reaction, 1253
Born, M., & P. Jordan, aperiodic processes, 2492
Bose, N. K., wind-channels, 1804
Boswell, M. C., & C. H. Bayley, inhibition of catalytic action, 1260
Bothe, W., scattered Röntgen rays, 1409
Bothe, W., & H. Geiger, Compton-effect, 2099
Bottlinger, K. F., stellar interferometers, 1060
Bouligand, G., vortex rings, 2214
Bouma, T., spectral lines, 2693
Bourguignon, G., & R. Déjean, double chronaxy, 1054
Boutaric, A., & G. Corbet, ternary mixtures, 948
Boutaric, A., & (Miss) F. Demora, diffraction phenomena, 1628
Boutaric, A., & G. Perreau, colloidal solution, 1761
Bowen, I. S., & R. A. Millikan, Bohr atom, 31; electron orbits, 1825; lines due to two-electron jumps, 2300; PP′ groups, 2495; series spectra, 2697; stripped atoms, 1902; two-valence electron atoms, 1903; X-ray doublet separations, 135; X-ray laws, 1396
Bowie, W., earth's crust, 492
Boyce, J. C., & J. H. Jones, Rydberg-Ritz equation, 481
Boylan, R. K., J. J. Nolan & G. P. de Sachy, atmospheric ionisation, 1713
Boys, C. V., heating value of gas, 394; meridian instrument, 539; refined observations, 1790
Bozorth, R. M., magnetometer, 2165
Bozorth, R. M., & L. Pauling, crystal structure, 2224
Brackett, F. S., atomic force fields, 32
Bradford, S. C., kinetic theory of vaporisation, 164
Bradley, A. J., lithium potassium sulphate, 1554
Bragg, W., carbon atom, 785; Oppau explosion, 231; thin films, 1414
Bragg, W. L., crystalline structure, 2226; refractive index, 320
Bragg, W. L., & S. Chapman, calcite crystals, 281
Bramley, A., electric charge, 1700; multiplet structure, 2694; synthesis of hydrogen bromide, 2404
Braune, H., diffusion in mixed crystals, 19
Braune, H., & O. Kahn, mobility of ions, 966
Bray, W. C., & R. S. Livingston, catalysis, 2791
Bredée, H. L., & E. Cohen, heats of solution, 2619
Bredig, G., & L. Teichmann, critical constants, 2725
Breguet, L., windmills, 2216
Breit, G., black body radiation, 1694; electron tubes, 1190; optical dispersion, 1071; quantum theory dispersion, 2643
Breit, G., & E. O. Hulburt, momentum of electrons, 1325
Breit, G., & A. E. Ruark, space quantisation, 1495
Brennen, H., isotopes of lead, 1005
Brentano, J., crystal-powder analysis, 1663
Brewer, A. K., ionisation, 2748
Bridgman, P. W., single-metal crystals, 467; transverse galvanomagnetic and thermomagnetic phenomena, 1200
Briggs, G. H., corona, 1040
Brighton, T. B., & D. A. MacInnes, transference numbers, 1773
Brill, A., stars, 1845
Brillouin, L., elasticity, 2419; surface tension, 1795
Brillouin, M., external gravitational field, 1833; plastic phase, 752
Briner, E., radio-activity, 2108
Brinkworth, J. H., ratio of specific heats, 1686
Briscoe, H. V. A., & P. L. Robinson, atomic weight of bromine, 1316
Briscoe, H. V. A., P. L. Robinson & G. E. Stephenson, tungsten wires, 1175
Briscoe, H. V. A., & L. A. Sayce, dielectric constants of liquids, 1477
Bristol, E. S., pipe-line temperature, 1428
Britton, H. T. S., electrometric titration, 2636
Broca, A., pupillometer, 525
Brode, R. B., slow electrons in gases, 1947
de Broglie, L., electronic intrinsic frequency, 1561; interference, 824; quantum emission, 30; quantum theory, 1329
de Broglie, L., E. Bäcklin, A. Dauvillier, M. Siegbahn & R. Thoraeus, X-ray spectrum, 1905
de Broglie, M., high-frequency radiation, 128
de Broglie, M., & J. Thibaud, atomic absorption of radiation, 1125
Bronstein, M., continuous X-ray spectrum, 2303; Laue-effect, 2304
Brook, G. B., & D. M. Fairlie, sodium in aluminium, 1251
Brooks, C. E. P., warm Polar climates 1835

Brooks, C. F., coronas, 1839
Brossa, A., separating albumin from globulin, 461
Brown, E. W., binary systems, 2050; spiral nebulæ, 1588
Brown, F. C., & A. M. McMahon, selenium crystal bridges, 2760
Brown, F. L., & J. W. Beams, Jr., spectrum lines, 2503
Brown, W. E. L., hydrogen-ion concentrations, 725
ten Bruggencate, P., open star clusters, 510
ten Bruggencate, P., & H. Kienle, Pleiades, 55
Bruhat, G., & M. Pauthenier, electrostriction, 1195
Bruins, H. R., & E. Cohen, diffusion velocity, 1291
Brummer, E., & S. v. Náray-Szabó, anodic purification of mercury, 1528
Brunetti, Rita, He 5876 Å., 1380; mercury line 4358, 869: Michelson's grating, 827
Bruni, G., & G. R. Levi, solid solutions, 1504
Brunt, D., lower atmosphere, 1840*; Polar front meteorology, 2450*
Brush, C. F., gravitation, 486
Brutzkus, M., chemical reactions in compressors, 1518
Brylinski, E., ether-drag, 484; Michelson experiment, 482
Brylinski, E., & A. Metz, Michelson experiment and relativity, 483
Bryson, F. F. S., J. P. Anderson & A. J. Dalladay, micro-camera, 1621
Bubb, F. W., Compton-effect, 1400; photoelectrons, 1959
Bucherer, A. H., Einstein invariance principle, 2234
Buchta, J. W., electron-beam oscillograph, 2153
Buckingham, E., transmission of sound, 2732
Buckley, H. E., & W. S. Vernon, crystal structure, 1816
Buckley, O. E., & L. W. McKeehan, permalloy, 2763
Büchi, P. F., diffusion potentials, 224
Buffington, R. M., H. D. Hoenshel & W. M. Latimer, low temperatures, 2117
Buisson, H., & C. Jausseran, neon spectrum, 1388
Bungartz, E., oxygen and sulphur spectra, 1895
Bureau, J., displacement, 2402
Bureau, R., atmospherics, 1448
Burger, H. C., W. C. van Geel & L. S. Ornstein, Zeeman-effect, 2101
Burger, H. C., & L. S. Ornstein, dispersion, 2072; light quantum theory, 1068; multiplet lines, 1360; Zeeman-effect, 103, 363
Burlot, E., explosives, 888
Burt, F. P., & D. H. Bangham, sorption of ammonia by glass, 1499
Burt, F. P., & J. T. Howarth, Boyle's law, 2123
Burt, R. C., electrolysis, 2803; photocurrent from sodium, 2152
Burton, E. F., & J. E. Currie, charged particles in liquid media, 1166
Burwell, C. G., P. W. Merrill & M. L. Humason, stars of class Be, 2654
Bury, C. R., & E. R. Jones, benzene, 2723
Busch, H., current distribution, 2600
Busse, W., speed of sound, 623; waterfall electric carriers, 1702
Butkow, K., lens aberrations, 821
Butler, J. A. V., e.m.f. in a galvanic cell, 458; Raoult's law and partial heats of solution, 1235; salts, 698
Buxton, A., diffraction, 822

Cabannes, J., & J. Dufay, atmospheric ozone, 2449
Cabannes, J., & J. Gauzit, diffusion of light, 2678
Cabrera, B., magneton, 1555
Cabrera, B., & A. Duperier, susceptibility, 2367
Cady, W. G., h.f. piezoelectric standards, 1734
Cain, J. R., iron red-shortness, 2783
Caldi, A., polarised dielectrics, 2734
Callendar, H L., superheated steam, 2540
Callow, E. H., ice crystallisation, 2382
Calvert, S., R. T. Dufford & Dorothy Nightingale, chemi-luminescent spectra, 845
Campbell, A., frequency meter, 1486; resistance in terms of mutual inductance, 1731
Campbell, A. N., amalgams of manganese, 715
Campbell, A. N., & A. J. Allmand, electrodeposition of manganese, 1278
Campbell, C., O. C. de C. Ellis & S. R. Stubbs, speed of flame, 232
Campbell, E. D., & G. W. Whitney, steel, 334B
Campbell, L., & I. Yamamoto, W Hydræ, 1590
Campbell, N., dimensional analysis, 1311
Campbell, N. R., Schrott-effect, 2336
Campbell, T. P., electrolysis, 2800
Cannon, Annie J., Henry Draper extension, 2652; new variable stars, 1031
Cantelo, R. C., methane, 606
Cario, G., & O. Oldenberg, iodine band-spectrum, 1894
Carl, R., electrolytic copper-zinc alloys, 1532
Carlsen, N. P., portable insulator test set, 51B
Carman, A. P., dielectric constants of liquids, 418
Carpenter, V. A., & P. C. Austin, rotatory dispersion, 337
Carrelli, A., Barlow's wheel, 913; Tyndall phenomenon, 1858
Carrière, Z., free reed, 625

Carroll, B. H., G. K. Rollefson & J. H. Mathews, ebullioscopic measurements, 2315; partial pressures of liquid mixtures, 2314
Carroll, M. F., & J. R. Partington, specific heats, 1687
Carruthers, J. N., drift indicator, 253
Carst, A., hydrogen spectrum, 561
Carter, S. R., & F. H. Clews, oxidation potentials, 446
Carver, E. K., & F. Hovorka, capillary rise, 1794
Caspar, C., (Miss) L. Lafontaine & V. Auger, salts of cupferron, 1521
Caspari, W. A., system-sodium carbonate-sodium sulphate-water, 434
Cassel, N. S., & G. H. Montillon, nickel-plating baths, 975
Castleman, R. A., Jr., round liquid columns, 768
Catalán, M. A., & K. Bechert, cobalt spectrum, 2092
Centnerszwer, M., G. Falk & A. Awerbuch, lead carbonate, 1522
Chadwick, J., & P. H. Mercier, β-rays, 2112
Chaffee, E. L., & A. Hampson, retina, 812
Chalonge, D., & P. Lambert, recording microphotometer, 1625
Chambers, Florence M., damping of a steel wire, 397
Chamié, (Miss) C., & Irène Curie, radon, 878
Chapman, D. L., J. E Ramsbottom & C. G. Trotman, hydrogen and oxygen in presence of silver and gold, 1254
Chapman, S., lower atmosphere, 1840; lunar diurnal magnetic variation, 2163
Chapman, S., & W. L. Bragg, calcite crystals, 281
le Chatelier, H., allotropy of glass, 6; communication of E. Burlot, 889; viscosity of glass, 5
Chaudhuri, P. R., A. Sen & J. Ghosh, electrode potential of mercury, 1480
Chaudron, G., & H. Forestier, sesquioxides of iron, aluminium and chromium, 450
Chaudron, G., & L. Blanc, iron and chromium magnetic properties of sesqui-oxides, 1219
Chaudron, G., & J. Valentin, solidification of alloys, 1242
Chaudun, (Miss) A., & H. Colin, hydrolysis constant of sugar, 969
Chaulard, A., short waves in living tissues, 1498
Chenault, R. L., P. D. Foote & W. F. Meggers, solid targets, 351
Chenault, R. L., P. D. Foote, & T. Takamine, forbidden spectral lines, 2696
Chenault, R. L., & A. E. Ruark, cadmium spectra, 2296
Chevenard, P., dilatometry, 2306; reversible anomaly of cupro-nickel, 2365
Chickering, H. G., du Pont manufacture of cyanides, 1256
Chien Cha, photoelectrons, 1199
Chipman, J., solubility of benzoic acid, 432
Chree, C., terrestrial magnetism, 2162, 2603
Christiansen, J. A., velocity of bimolecular reactions, 448
Chuckerbutti, B. N., Nobili's rings, 315
Cioffi, P. P., & L. W. McKeehan, demagnetisation, 681
van Cittert, P. H., hydrogen spectral lines, 2703
Civita, Levi-, T., irrotational waves, 770
Clack, B. W., Rayleigh interferometer, 1853
Clare, N. D., J. W. Shipley & I. R McHaffie, corrosion, 1984
Clark, emulsion fog, 1637*
Clark, A. L., ethyl ether, 746; perfect gas, 897; polarisation capacity, 983
Clark, G. L., & W. Duane, scattered X-rays, 1668
Clark, G. L., W Duane & S. K. Allison, secondary X-ray spectra, 576
Clark, L. H., X-ray intensity, 1121
Clark, W., standard development, 1357
Clarkson, W., W. Stephenson & J. Taylor, capacities and high resistances, 1732
Clarkson, W., & J. Taylor, "flashing" of discharge-tubes, 1454, 1455
Claude, G., neon tubes, 1642
Clay, J., atmospheric electricity, 2735
Clayeux, high-frequency ammeter, 212
Clevenger, J. F., micro-melting-point apparatus, 155
Clews, F. H., & S. R. Carter, oxidation potentials, 446
Clough, H. W., systematically varying period, 803
Cobb, P. W., & F. K. Moss, eye fatigue, 1315B
Coblentz, W. W., Mars, 2659; stellar temperatures, 2453
Coblentz, W. W., & C. W Hughes, ultra-violet reflecting power of metals and sulphides, 518
Coblentz, W. W., & C. O. Lampland, planetary radiation, 2245
Cohen, A., & A. Curs, contact electricity, 456
Cohen, E., & H. L. Bredée, heats of solution, 2619
Cohen, E., & H. R. Bruins, diffusion velocity, 1291
Cohen, E., W. D. Helderman & A. L. T Moesveld, specific heats, 597
Cohen, E., W. A. T. de Meester & A. L. T. Moesveld, piezo-chemical studies, 949; solubility, 2376
Cohen, E., & A. L. T. Moesveld, equilibria, 2782
Cohn, H., gridless receiving, 650
Cojan, J., aberrations, 326
Coker, E. G., photo-elasticity, 1867

Colin, H., & (Miss) A. Chaudun, hydrolysis constant of sugar, 969
Collignon, M., explosive waves, 908
Collins, A. M., & J. M. Nelson, electrolytic reduction of alkyl groups, 460
Colson, A., solubility, 946, 947
Compton, A. H., scattered X-rays, 130; X-ray scattering, 2105
Compton, A. H., H. N. Beets & O. K. De Foe, grating space, 1815
Compton, A. H., & J. A. Bearden, scattered X-rays, 1403
Compton, A. H., & Duane, scattering of X-rays, 584
Compton, A. H., & A. W. Simon, β-rays, 1669
Compton, K. T., atomic nitrogen, 2506
Compton, K. T., & C. Eckart, abnormal low-voltage arc, 192; non-oscillatory abnormal low-voltage arc, 1457
Compton, K. T., & L. A. Turner, iodine line 2062 Å., 2098; mercury-vapour spectra, 2088; singly ionised atomic mercury, 1889
Compton, K. T., L. A. Turner & W. H. McCurdy, striated glow discharge, 1171
Condon, E., stellar evolution, 1601
Conklin, O. E., microturbidimeter, 2202
Conrad, V., Schuster's probability theory, 297
Conrady, (Miss) H. G., Foucault knife-edge test, 334
Constable, F. H., catalytic activity, 2396; catalytic decomposition, 2395
Conti, Armellini-, G., & G. Armellini, moon, 1047
Coolidge, W. D., X-ray generating outfits, 877; X-ray tube development, 1910
Cooper, W. F., magnetic field around conductors, 507B
Corbet, G., & A. Boutaric, ternary mixtures, 948
Corbino, O. M., & E. Persico, electronic tube oscillator, 1960; plate current in triodes, 1961
Cork, J. M., short-wave X-ray spectrograph, 1412
Corse, W. M., corrosion, 1984; non-ferrous metallurgy, 1250
Coster, D., X-ray spectra, 1667
Couchak, D., & I. Pouget, radio-active springs, 2534
Coutts, J. R. H., colloidal suspensions, 2773
Coutts, J. R. H., E. M. Crowther, B. A. Keen & S. Odén, Odén-Keen recording balance, 736
Covert, R. N., meteorological instruments, 1283
Cowley, W. L., & E. F. Relf, vibrations of bars, 15
Cox, A. B., fluid flow, 766
Cox, R. T., Pfund's pressure gauge, 396
Cox, R. T., & J. C. Hubbard, reflection and refraction, 2663
Cragoe, C. S., T. S. Sligh, Jr., H. F. Stimson & N. S. Osborne, specific heat, 1688
Cramer, Lüppo-, emulsion ripening, 836; latent fog, 1865; latent image, 832, 1861; silver, 2485; solarisation, 554
Crawford, O. G. S., aerial archæology, 345
Crehore, A. C., hydrogen atomic model, 1821
Crew, H., vacuum-arc spectrum of titanium, 124
Crew, M. C., H. E. Steinert & B. S. Hopkins, solubility of yttrium salts, 1234
Crooks, W. E., & E. B. R. Prideaux, diffusion potentials, 225
Crowther, E. M., J. R. H. Coutts, B. A. Keen & S. Odén, Odén-Keen recording balance, 736
Crowther, E. M., & W. S. Martin, hard tap-waters, 455
Crowther, E. M., & A. N. Puri, vapour-pressure of capillary systems, 163
Crowther, H. L., continuous wave syntoniser, 1205
Crowther, J. A., induction coils, 1973
Crowther, J. A., & R. J. Stephenson, electrolytic interrupter, 2360; induction coil, 1974
Croze, F., ionised nitrogen and oxygen lines, 1093; ionised oxygen, 1386; nitrogen spectrum lines, 1092
Crudeli, U., electrodynamics, 791; rhombic uniformly rotating systems, 1313
Császár, E., radiation, 2544
Curie, Irène, α-rays, 1682; polonium, 2530
Curie, Irène, & (Miss) C. Chamié, radon, 878
Curie, Irène, & J. d'Espine, β-rays from RaE, 2531
Curie, Irène, & N. Yamada, α-particles from polonium, 137; long-range particles, 2113
Curie, (Mme.) P., radium, 1131; radium emanation decay, 879
Curie, (Mme.) P., & D. K. Yovanonovitch, heat from radium salts, 1675
Currie, J. E., & E. F. Burton, charged particles in liquid media, 1166
Curs, A., & A. Cohen, contact electricity, 456
Curtis, H. L., & C. Matilda Sparks, mutual inductance of two coaxial circles, 942
Curtis, W. E., Fulcher hydrogen bands, 1657
Curtis, W. E., & R. G. Long, band-spectrum of helium, 2288
Czerny, M., & G. Hettner, gas thermic slip, 900
Czochralski, J., elasticity, 747; metallurgy, 1247

Dacos, F., atomic theory, 2017
Daecke, H., sub-electron question, 788; sub-electrons, 2427

Dällenbach, W., glow discharge, 2567; Townsend theory, 2334
Dällenbach, W., E. Gerecke & E. Stoll, negatively charged probes, 1180
Dahll, P., & H. Goldschmidt, catalytic action, 931
Dahmen, W., spark spectrum of potassium, 569
Dalladay, A. J., J. P. Anderson & F. F. S. Bryson, micro-camera, 1621
v. Dallwitz-Wegner, R., lubricating oils, 257; viscosity, 2205
Dammann, (Miss), Bois, (Miss) Hée, Lacoste & Rothé, Oppau and La Courtine explosions, 906
Daniels, F., & J. W. Williams, specific heats, 2539
Daniels, S., aluminium alloys, 960
Danne, G., M. Demenitroux, A. Maubert & L. Jaloustre, radio-active springs, 2535
Danner, P. S., amalgam electrodes, 719; barium and strontium, 707
Dannmeyer, F., flame spectra, 1881
Darmois, E., optically-active compounds, 828
Darmois, E., & A. Honnelaitre, ammonium dimolybdo-malate, 85
Darrow, K. K., electricity in gases, 1465
Darwin, C. G., magnetism, 2157; optical constants of matter, 829
Das, J. P., J. H. Turnbull & F. W. Grover, ampère trough experiment, 1701
Datta, S., band-spectra, 108
Daudt, W., & H. Ewest, glass surfaces, 2744
Dauvillier, A., Crooke's tube, 2587; identification by X-rays, 2524
Dauvillier, A., E. Bäcklin, L. de Broglie, M. Siegbahn & R. Thoraeus, X-ray spectrum, 1905
Davey, W. P., lattice constants, 2225
David, W. T., combustion rate, 2548
Davidson, L. F., silver bromide grain, 1354
Davies, C. W., conductivity of electrolytes, 1778; electrolytes, 2798
Davies, E. L., & G. H. Livens, metallic conduction, 1724
Davies, P. G., & M. P. Appleby, aniline, 2409; osmotic pressure, 2410
Davis, A. H., reverberation, 2329
Davis, B., indices of refraction, 2667
Davis, B., & R. v. Nardroff, refraction of X-rays, 579
Davis, D. S., & W. G. Whitman, gas-absorption rates, 944
Davis, G. E., salt vapours in Bunsen flame, 601
Davis, G. H. B., R. P. Russell & W. G. Whitman, solubility of ferrous hydroxide, 1232
Davisson, C., & L. H. Germer, thermionic work function, 1181
Dean, G., carbon and silver, 999
Dean, W. R., elastic stability, 1797
Dearden, W. H., & F. C. Thompson, solid diffusion, 226
Debye, P., X-ray scattering, 2104
Debye, P., & J. McAulay, neutral salt action, 1527
Debye, P., & L. Pauling, ionised solutes, 2772
Décombe, L., electrified spherical corpuscles, 787
Dee, A. A., W. V. Mayneord & S. W. J. Smith, magnetism of annealed carbon steels, 1216
Defant, A., atmospheric circulation, 488
De Foe, O. K., photo-electrons, 1958
De Foe, O. K., A. H. Compton & H. N. Beets, grating space, 1815
Déjardin, G., spectra of monatomic gases, 117
Déjardin, G., L. Bloch & E. Bloch, neon spark spectrum, 1652; spark spectra, 853
Déjean, R., & G. Bourguignon, double chronaxy, 1054
Delaplace, R., surface solutions, 2375
Delawney, E., X-ray quantitative analysis, 2171
Deloraine, E. M., high permeability alloy of iron and nickel, 1217
Dember, H., photoelectric emission, 2574
Demenitroux, M., A. Maubert, L. Jaloustre & G. Danne, radio-active springs, 2535
Demetrescu, G., astronomical objective, 1057
Demora, (Miss) F., & A. Boutaric, diffraction phenomena, 1628
Deodhar, D. B., Israj, 171
Derieux, J. B., charge on mercury droplets, 2558
Desch, C. H., corrosion, 2777; fluxes and slags, 21B
Desch, C. H., & (Mrs.) E. M. Vellan, electrolytic deposition, 2804
Deslandres, H., band-spectra, 2085, 2274, 2504; spectra, 842
Desloges, Jarry-, lunar halos, 1598
Deutsch, W., point discharge, 1709
Dewey, Jane, transference numbers, 2628
Dhar, N. R., catalysis, 230; ions, colloids, and gels, 2621; nitric acid on metals, 1514
Dhar, N. R., & S. Ghosh, adsorption, 1754
Dhar, N. R., & R. P. Sanyal, photosynthesis, 2685
Dickinson, J., electrification of gases, 2563
Dieke, G. H., band-spectra, 2276; Fulcher hydrogen bands, 2286; hydrogen spectrum, 560, 1656; negative nitrogen bands, 1390
Dijkstra, D. W., & F. M. Jaeger, isotopes, 35
Dines, L. H. G., electrical time-marking system, 250
Dines, W. H., pressure and temperature, 1576

Dirac, P. A. M., adiabatic invariance, 1809 ; Doppler principle, 106 ; statistical equilibrium, 411
Dirken, M. N. J., gas-analysis apparatus, 603
Dix, E. H., Jr., & A. J. Lyon, aluminium alloys, 956
Dixey, F., lake level, 307
Dixon, H. B., coal-dust explosions, 235
Dobson, G. M. B., clouds and clear skies, 1580*
Dodge, H. F., & H. A. Frederick, electrical stethoscope, 629
Döpel, R., canal rays, 1711
Doi, U., Bucherer's experiment, 1563
Donat, K., sensitised fluorescence, 556
de Donder, T., affinity, 2183 ; specific affinity, 2391
Donnan, F. G., Boyle's law, 2123*
Doodson, A. T., harmonic tidal constants, 308
Doolan, J. J., precipitation of selenium hydrosol, 1533
Doolan, J. J., & J. R. Partington, tellurium vapour-pressure, 1141
Doolittle, A. K., electrolytic preparation of metanilic acid, 1274
Dorgelo, H. B., ultra-violet portion of spectra, 1880
Dorneich, M., & E. Albrecht, photometer, 2674
Dornig, W., frequency transformation, 139B
Dorno, C., & R. Thilenius, Davos frigorimeter, 1430
Dorsey, H. G., measuring short time intervals, 13 ; mica condenser, 179
Doubleday, I., boundary lubrication, 256
Douglas, C. K. M., cyclones, 299 ; upper-air temperature, 2445
Dowling, J. J., & J. A. C. Teegan, optical interference, 2266
Downey, W. E., & H. J. Emeléus, luminescent oxidation of phosphorus, 1091
Dreisch, T., infra-red absorption coefficients, 1056
Drescher, C. W., & E. H. Schulz, stellite and similar alloys, 438
Drucker, C., molecular weight, 2618
Drucker, C., & W. U. Behrens, specific heats, 595
Duane, W., reflection of X-rays, 1662 ; X-ray diffracting power, 2713
Duane, W., & S. K. Allison, scattered radiation due to X-rays, 1405
Duane, W., Alice H. Armstrong & R. J. Havighurst, reflection of X-rays, 1907
Duane, W., & G. L. Clark, scattered X-rays, 1668
Duane, W., G. L. Clark & S. K. Allison, secondary X-ray spectra, 576
Duane, W., & A. H. Compton, scattering of X-rays, 584
Duane, W., Alice H. Armstrong & W. W. Stifler, secondary X-ray spectra, 575
Dubois, R., oscillograph, 921B, 1357B
Duckert, P., micrometers, 1287, 1788
Duclaux, J., theory of gas and equation of state, 611
Dufay, J., & J. Cabannes, atmospheric ozone, 2449
Duffendack, O. S., band-spectra, 2084 ; secondary spectrum of hydrogen, 120
Duffendack, O. S., & H. Huthsteiner, low-voltage arcs, 1450
Duffield, W. G., gravity at sea, 798
Dufford, R. T., Dorothy Nightingale & S. Calvert, chemi-luminescent spectra, 845
Dufour, A., electromagnetic perturbation, 2346 ; explosion, 905
Dufraisse, C., & C. Moureu, poisoning of oxidising catalysts, 1259
Dugas, R., motion of a system of particles of variable mass, 16
Dunbar, R. T., scattering of X-rays, 1404
Dunbrook, R. F., & A. Lowy, electrolytic oxidation of *p*-nitrotoluene, 1273
Duperier, A., & B. Cabrera, susceptibility, 2367
Duseberg, T., fluorescent light, 1639
van Dusen, M. S., platinum resistance thermometry, 1429
Dushman, S., H. N. Rowe, Jessie Ewald & C. A. Kidner, tungsten electron emission, 1717
Duvall, C. R., & H. W. Fisk, magnetometer deflection constants, 1975
Dye, D. W., comparison of frequencies, 1970 ; harmonic wave-meter, 670
Dye, D. W., & L. Hartshorn, mica, 934
Dyer, J. W. W., & N. K. Adam, thin films, 998
Dymond, E. G., critical potentials of gases, 183, 1949
Dyson, F. W., astronomy of the Jungfrau, 71

Ebeling, I., reflection, 2064
Eberman, N. F., & W. A. Patrick, adsorption, 1225
Ebert, F., & K. Becker, crystal structure, 1319
Ebert, H., high-vacuum pumps, 738
Ebert, L., dielectric polarisation, 730 ; dipole molecules, 1001
Ebert, L., & H. v. Halban, optical absorption, 318 ; picric acid, 716
Eccles, W. H., & C. F. A. Wagstaffe, electrical vowel sound production, 1154
Eck, B., & E. Kayser, simple gas laws, 2121
Eckart, C., & F. W. Bubb, Compton-effect, 1400
Eckart, C., & K. T. Compton, abnormal low-voltage arc, 192 ; non-oscillatory abnormal low-voltage arc, 1457
Eckhart, E. A., speed of sound, 624
Eddington, A. S., mass-luminosity, 2039 ; radiative equilibrium, 2043 ; rotating stars, 1605

Edgerton, H. A., & F. C. Toy, latent photographic image, 92
Egerton, A. C., chemical constants, 1505; monatomic vapour-pressures, 1139
Eggert, J., & W. Noddack, silver compounds, 1635; silver halide emulsions, 1636
Eguchi, M., permanent electret, 1165
Ehrenfest, P., & H. Bateman, electromagnetic fields, 632
Ehrenfest, P., & R. C. Tolman, weak quantisation, 29
Ehrenhaft, F., radio-active colloidal particles, 1913
Eilert, A., electrolytic calcium amalgam, 1779
Einstein, vacuum-radiation, 2640
Einstein, A., Jordan's quantum radiation, 1870; perfect gas, 1439, 1440; quantum theory, 159
Eisele, I., refractive index, 1335
Elam, C. F., orientation of crystals, 2434
Elam, C. F., & G. I. Taylor, aluminium crystals, 2415
Elder, F. R., & F. B. Vogdes, three-element tubes, 929
Eldridge, J. A., polarisation experiment of Wood and Ellett, 83
Ellett, A., resonance radiation, 838, 1873
Ellett, A., & R. W. Wood, resonance radiation, 99
Elliott, F. A., & S. E. Sheppard, swelling of gelatine, 246
Elliott, G. A., & I. Masson, gaseous mixtures, 2322
Ellis, C. D., radium C β-rays, 144
Ellis, C. D., & W. A. Wooster, γ-rays, 2533
Ellis, O. C. de C., C. Campbell & S. R. Stubbs, speed of flame, 232
Ellsworth, H. V., radio-active minerals, 1422
Elsner, G., & F. Sauerwald, metallic oxides, 1506
Elwell, C. F., photoelectric cells, 933
Emeléus, H. J., & W. E. Downey, luminescent oxidation of phosphorus, 1091
Emeléus, K. G., electrical counter, 2342; radium-E, 884
Emeléus, K. G., E V. Appleton & M. A. F. Barnett, α-particle counter, 145
Emersleben, O., frequency multiplication, 1191
Emerson, S. A., & L. C. Martin, sensitivity of fovea, 2250
Endô, H., solidification of alloys, 1241
Endō, Y., crystalline substances, 891
Engle, E. A., & B. S. Hopkins, metallurgy of beryllium, 1276
Enos, G. M., & R. J. Anderson, brass corrosion, 979
Epstein, P. S., jumping of electrons, 480
Erickson, W. E., & L. A. Kirst, corrosion-resisting alloys, 2781
Erikson, H. A., actinium active deposit ions, 1186; ions in air, 642
Errera, J., Hertzian waves, 918
Ervine, Edith, V. H. Stott & D. Turner, viscosity, 1792
Escande, L., & M. Ricaud, velocities in liquids, 1293
Esclangon, E., zones of silence, 2326
Esmarch, W., metallic aggregates, 656
d'Espine, J., β-rays, 2110
d'Espine, J., & Irène Curie, β-rays from RaE, 2531
d'Espine, J., & D. K. Yovanovitch, magnetic spectrum of β-rays of ThB + C, 1105
Estermann, J., deposits from molecular rays, 2317
Estrafalaces, Ada, & Marya Kahanowicz, coloured glasses, 323
Eucken, A., & F. Fried, entropy, 157, 1698
Eucken, A., & E. Karwat, condensed gases, 609
Eucken, A., E. Karwat & F. Fried, thermodynamic vapour-pressure equation, 165
Eustice, J., flow of fluids, 989
Evans, J. W., continental mechanics, 2451
Evans, U. R., corrosion, 1984; surface abrasion, 2167; thin films, 1331
van Everdingen, E., clouds, 2644
Evershed, J., solar rotation, 2034
Evershed, S., permanent magnets, 2164
Ewald, Jessie, C. A. Kidner, S. Dushman & H. N. Rowe, tungsten electron emission, 1717
Ewald, P. P., Röntgen rays, 1397; X-rays, 367
Ewald, W., heterochromatic photometry, 2272
Ewald, W., & J. Flügge, photographic photometry, 2271
Ewald, W., & M. Polányi, plasticity of rock-salt under water, 8; tensile strength, 1798
Ewest, H., & W. Daudt, glass surfaces, 2744
Ewing, W. W., calomel electrode, 1529
Exner, F. M., cold and warm spells, 1575; pressure and temperature, 1836
Eydoux, flow of liquids, 2006; meridian paths of turbine blades, 2215
Eyraud, H., electro-magnetic field, 1937; gravitational electromagnetic field, 1010

Fabry, C., heterochromatic photometry, 89; ozone, 1589; spectroscopy, 1088
Fage, A., airscrew vibrations, 1545
Fahlman, E. G., & R. J. Anderson, internal stress, 758
Fahmy, H., & N. Shaw, saturated air, 2446
Fahrenwald, A. W., flotation, 744
Fairbrother, F., electro-endosmosis, 1264

Fairbrother, F., & H. Mastin, electro-endosmosis, 1263, 1530
Fairfield, Priscilla, A stars, 1591
Fairlie, D. M., & G. B. Brook, sodium in aluminium, 1251
Fairweather, D. A., electrolysis of alkyloxy acid salts, 1781
Fajans, K., fusion of graphite, 1433
Falk, G., A. Awerbuch & M. Centnerzwer, lead carbonate, 1522
Farnsworth, H. E., electronic bombardment, 1183
Farren, W. S., & G. I. Taylor, plastic extension of metals, 1764
Fassbender, M., nitrogen negative bands, 1095
Fatou, P., motion under attraction of flat ellipsoid, 1307
Fauconnier, shielded X-ray tube, 1113
Fehse, W., tungsten furnace, 592
Feller, A., & K. Schaum, activisation of chlorine, 403
Fenwick, F., & R. G. van Name, dissimilar electrodes, 1268
Ferguson, A. L., & G. van Zyl, decomposition potentials, 940
Ferguson, S. P., humidity, 1013
Fermi, E., atoms and electrically-charged particles, 644; quantising systems, 162
Ferrari, A., & G. R. Levi, crystalline reticuli, 23
Ferrié, G., oscillations of pendulums, 1537; photoelectric cells, 1733
Ferrié, G., & R. Jouaust, oscillations of pendulums, 1538
Ferrié, G., R. Jouaust & R. Mesny, photoelectric cells, 2588
Ferrier & L. Besnerais, new electromagnetic law, 1444
Ferrier, R., & M. le Besnerais, ether, 1327
Feussner, O., Wiedemann-Franz law, 887
Fichter, F., aromatic hydrocarbons, 962; electro-chemical oxidation, 964
Filippini, G., amplifiers with reaction, 413
Fink, C. G., stainless steel, 2784*
Finzi, B., dissipation function, 1806; fluid motion, 771
Finzi, N. S., deep radiotheraphy, 1750
Fischer, F., current distribution, 2599
Fischer, H., fusion of graphite, 1432*
Fischer, V., metallic alloys, 1988; pressure equations, 613
Fischvoigt, H., & F. Koref, metal crystals, 2624
Fisher, J. W., gyro-magnetic effect, 2606
Fisher, R. A., & S. Odén, analysis of sediments, 987
Fisher, R. M., short electromagnetic waves, 2146
Fisk, H. W., magnetic observations, 1492
Fisk, H. W., & C. R. Duvall, magnetometer deflection constants, 1975
Flechsig, W., photoelectric primary currents, 2754
Flegler, E., & W. Rogowski, potential waves, 2143
Fleming, J. A., centenary of electromagnet, 2156; magnetic standards, 678
Fletcher, H., & J. C. Steinberg, loudness, 175
Fleming, J. A., & L. A. Bauer, terrestrial magnetism, 1221
Flint, H. T., general vector analysis, 2219
Flügge, J., & W. Ewald, photographic photometry, 2271
Foch, A., Recknagel disc, 248
Focken, C. M., & S. P. McCallum, neon, hydrogen and nitrogen, 2137
Foerster, hydrogen overvoltage, 724*
Foerster, F., electrolysis, 2801
Foëx, G., ionic magnetic states, 1743
Foote, P. D., W. F. Meggers & R. L. Chenault, solid targets, 351
Foote, P. D., & F. L. Mohler, photoelectric ionisation, 2747
Foote, P D., & A. E. Ruark, wavelength shifts, 1631
Foote, P. D., T. Takamine & R. L. Chenault, forbidden spectral lines, 2696
Forbes, G. S., & G. R. Harrison, mercury-vapour lamp, 1178, 2742
Ford, (Miss) G. W., & D. Hanson, copper, 757
Forestier, H., & G. Chaudron, sesquioxides of iron, aluminium and chromium, 450
Forrer, R., artificial magnetic anisotropy in nickel, 1978; magnetic anisotropy, 2158
Forster, A., inverse square law, 278
Forsythe, W. E., optical pyrometers, 1137
Forsythe, W. E., & A. G. Worthing, potentiometer, 2155
Foster, R. M., driving-point impedance, 575B
Fournier, luminous rays, 295
Fournier, G., absorption of β-rays, 1126; β-rays, 2111; electron tables, 1004; ether, 1829
Fournier, G., & F. Prunier, relativity, 1565
Fowler, A., ionised nitrogen spectrum, 1096; silicon spectrum, 2093; spectra, 559
Fowler, R. H., capture and loss of electrons, 187; correspondence principle, 1877; stopping of α-particles, 2529
Fox, E. J., & C. W. Whittaker, cement dust, 705
Fraenkel, W., & W. Goez, solid metals, 1246
Franck, J., M. Bodenstein, inelastic atomic and molecular impact, 2389
Franck, J., & M. Born, formation of molecules, 1323; heat of reaction, 1253

Frank, L., property-composition curves, 903
Frank, N. H., & P. Heymans, time intervals, 1999
Franklin, P., network electric currents, 1940
Frazer, R. A., viscous fluid, 2008
Frederick, H. A., & H. F. Dodge, electrical stethoscope, 629
French, E. A. H., coppered-glass mirrors, 529
French, H. S., & T. M. Lowry, absorption spectra of cupric compounds, 360
Frenkel, J., metals, 472; motion of free electron, 1671; point-electrons, 1826; solid dielectrics, 283
Frerichs, R., multiplets, 1395
Freundlich, H., F. Stapelfeldt & H. Zocher, flow anisotropy, 813
Friauf, J. B., X-ray spectograph, 2675
Fricke, H., disperse systems, 651
Fricke, H., & O. Glasser, hard X-rays, 876; secondary electrons, 573
Fricke, H., & S. Morse, conductivity of disperse systems, 1474
Fricke, R., & C. Rohmann, liquid potentials, 712
Fried, F., & A. Eucken, entropy, 157, 1698
Fried, F., E. Karwat & A. Eucken, thermodynamic vapour - pressure equation, 165
Friedel, E., smectic substances and X-rays, 1117
Friedel, G., crystals, 279; structure of fatty acids, 1317
Friederich, E., solid state, 1811
Friederich, P., & K. Schaum, electrophoresis, 727
Friend, J. N., D. W. Hammond & G W. Trobridge, rate of solution, 2775
Friend, J. N., & J. S. Tidmus, rate of dissolution of zinc, 2377
Friese, J., & E. Waetzmann, resistance thermometers, 1136; stationary sound waves, 174
Friese, J., E. Waetzmann, A. v. Hippel, thermo-microphone, 910
Friese-Greene, C. H., colour cinematography, 2074
Fröhlich, P., law of refraction, 522
Frölich, F., electrodeposition of metals, 1277*
Frölich, P. K., electrodeposited iron, 2807; gelatine, 2802
Frohnmayer, W., & R. Glocker, X-ray spectroscopy, 1418
Frost, E. B., & O. Struve, 61 μ Orionis, 503; 66 Eridani, 1029
Fry, T. C., Schrott-effect, 1460
Fryling, C. F., F. O. Rice & W. A. Wesolowski, temperature coefficient of a chemical reaction, 449
Füchtbauer, C., & E. Holm, ultra-violet light, 2095
Füchbauer, C., F. Waibel & E. Holm, absorption line of iodine atom, 358; iodine atom, 1654
Fürth, R., dielectric constants, 1161
Fues, E., spectroscopic displacement laws, 1086
Fujioka, Y., & S. Nakamura, spark lines of carbon, 2292
Fukuda, M., electrolytic iron, 417; spectrum of mercury, 1374
Fukuda, M., & T. Takamine, mercury line 2270 Å. ($1S - 2p_1$), 1112; spectra of constricted arc of metals, 125
Funck, Marguerite, absorption spectra, 860
Fuss, V., aluminium alloy, 227

Gaede, extreme vacuum pump, 739*
Gale, H. G., A. A. Michelson & F. Pearson, velocity of light, 2025
Galibourg, J., & L. Guillet, Herbert pendulum, 2002
Ganesan, A. S., polarisation of light, 1857
Gans, R., molecular dispersion, 825; permeability, 679; ultra-microscopic particles, 1072
Garabedian, C. A., elastic deformation, 1296
Gardner, I. C., & J. J. Arnaud, image curvature, 1058
Garner, W. E., chemical reactions, 1517; heterogeneous catalysis, 970
Garrison, A., silver halides, 1748; silver iodide photo-voltaic cell, 1196
Gates, S. F., & B. Lambert, hydrogen and palladium, 2373
Gaubert, P., crystal forms, 1318
Gauger, A. W., catalytic activity, 2793
Gauzit, J., & J. Cabannes, diffusion of light, 2678
Gee, W. W. H., Joule's first measurements of "J," 1924
van Geel, W. C., multiplets, 2695
van Geel, W. C., H. C. Burger & L S. Ornstein, Zeeman-effect, 2101
Geffcken, H., intermittent glow-discharge, 1703
Geffcken, H., & H. Richter, "glow" relay, 939
Gehrcke, E., & E. Lau, hydrogen spectrum, 1884
Geiger, H., & W. Bothe, Compton-effect, 2099
Geiss, W., crystals, 280; density of rock-salt crystals, 1281
Geiss, W., & J. A. M. v. Liempt, metals of great purity, 2179
General Electric Co. (London), Research Staff of, rapid-weighing torsion balance, 1285; tungsten single crystals under tensile stress, 20
George, H. S., metallography, 819
George, W. H., struck string, 2130, 2552; vibrating string, 1299; vibration camera, 547
Gerding, H., & A. Karssen, passivity, 1989
Gerecke, E., E. Stoll & W. Dällenbach, negatively charged probes, 1180

Gerlach, W., atomic rays nomenclature, 1002 ; direction quantisation, 1494
Gerlach, W., & W. Schütz, excited atoms, 1000
Germer, L. H., thermionic electrons, 2344
Germer, L. H., & G. Davisson, thermionic work function, 1181
Gero, W. B., & P. Hidnert, molybdenum, 589
Gerthsen, C., & W. Kossel, sodium light, 2481
Getman, F. H., absorption of ultra-violet light, 2251
Gevrey, M., tides, 806
Gex, (Miss) M., & F. Vlès, petroleum ultra-violet absorption, 1089
Gherzi, E., cyclones, 45 ; radio-goniometric observations at Shanghai, 305
Ghose, B. N., neon tubes, 1177
Ghosh, J., P. R. Chaudhuri & A. Sen, electrode potential of mercury, 1480
Ghosh, R. N., electrical conductivity of heated gas, 1963 ; fluorescence of mercury-vapour, 2687 ; pianoforte string, 626 ; specific heat, 1427 ; stretched string, 2129
Ghosh, R. N., & S. Bhargava, pianoforte hammer, 997
Ghosh, R. N., & N. K. Sur, potassium vapour absorption spectrum, 1097
Ghosh, S., & N. R. Dhar, adsorption, 1754
Giacomini, F. A., molecular heats of gases, 2122
Gibault, G., C. Maurain & E. Salles, atmospheric conductivity, 2332
Gibbs, R. E., reflection of X-rays, 1660
Gibson, K. S., heterochromatic photometry, 1633
Gibson, R. E., acetate electrolysis, 985
Giddings, G. W., & G. F. Rouse, ionisation, 2745
Giebe, E., & E. Alberti, wavemeter, 1969
Giebe, E., & A. Scheibe, piezoelectric crystal rods, 2593 ; piezoelectric properties of crystals, 2594
Gilbert, C. S., K. L. Wismer & F. B. Kenrick, superheating of liquids, 594
Gilbert, H. W., & P. E. Shaw, electrical charges, 2133
Gill, E. W. B., space charge effect, 1955
Gill, E. W. B., & J. H. Morrell, short electric waves, 1471
Gillespie, L. J., Haber equilibrium data, 1693
Ginsberg, H., R. Lassé & W. A. Roth, micro-calorimeter, 153
Giorgi, G., space and time, 2440
Girard, R., acid solutions, 2792
Glaser, A., diamagnetism of gases, 607
Glasser, O., & H. Fricke, hard X-rays, 876 ; secondary electrons, 573
Glasstone, S., electrolytic polarisation, 462, 1272, 2795 ; lead kathode, 2796 ; polarised electrodes, 1995
Gleason, J. M., & F. G. Wick, kathodo-phosphorescence, 837
v. Gleich, G., ambiguity in relativity theory, 41
Glocker, R., recrystallisation-structure of metals, 1512
Glocker, R., & R. Berthold, X-ray intensities, 1413
Glocker, R., & W. Frohnmayer, X-ray spectroscopy, 1418
Glocker, R., & E. Kaupp, recrystallisation, 369
Glockler, G., critical potential of methane, 1466
Gmelin, P., thermo-elements, 1138
Goby, P., stereoscopic micro-radiography, 1627
Gockel, A., atmospheric electricity, 401
Goens, E., & E. Grüneisen, metal crystals, 784
Goetz, A., glow electronic emission, 1718 ; pure iron, 659, 1726
Goez, W., & W. Fraenkel, solid metals, 1246
Gold, E., polar front meteorology, 2450*
Goldie, A. H. R., atmosphere, 2029 ; waves in atmosphere, 2447
Goldsbrough, G. R., Saturn's ring, 314
Goldschmidt, H., & P. Dahll, catalytic action, 931
Goldstein, E., gas kathode, 1942
Goos, F., spectrum of hydrogen, 1379
Goosmann, A., short two-layer coil, 1192
Gorakh Prasad, mean parallax, 1035
Gorbatscheff, K., comparison of capacities, 400
Gorbatschew, A., adsorption isotherms, 2767
Gorceix, C., ovoid shape of earth, 1022
Gorczyński, L., recording pyrheliometer, 537
Gore, W., gravitation and radiation, 296
Gossot & Liouville, interior ballistics, 1685
Goudsmit, S., iron multiplets, 562 ; lanthanum spectrum, 1891 ; neon spectrum, 1898
Goudsmit, S., & R. de L. Kronig, Zeeman components, 2708
Graber, M. E., optical constants, 2665
Graf, H., lens errors, 530
Graham, A. K., electro-deposition of metals, 1277*
Grandadam, R., & L. Hackspill, displacement of alkaline metals by iron, 1255
Granier, J., absorption of short waves, 1189 ; dielectric viscosity, 936 ; electromagnetic waves, 915
Granier, J., & B. de Lenaizan, specific inductive capacity of ice, 1164
Grant, J., concentration cells, 1261
Gray, scattering of X-rays, 584*
Grebe, L., & L. Kriegesmann, ionisation of air by X-rays, 368
Grebenschtschikow, J. V., & N. A. Puschin, equilibria at high pressures, 391

Green, G., force within atom, 1822
Green, H. G., oblique impact, 2011
Green, J. B., lithium line λ6708, 2698
Green, J. B., & M. Petersen, magnesium spectra, 859; spectrum of magnesium, 2700
Greenawalt, W. E., Greenawalt electrolytic copper-extraction, 978
Greene, Friese, C. H., colour cinematography, 2074
Greenwood, G., cuprite and rutile, 21
Grenacher, M., dielectric constants, 2358
Grialou, J., plane vertical motion of continuous viscous fluid, 7
Grieveson, C. J. W., absorption of ultraviolet light, 1848
Grimm, H. G., mixed crystals, 470
Grindley, G. C., & A. M. Tyndall, mobility in air of ions, 188
Gröber, H., heating and cooling, 1922
Gross, F., photoelectric effect, 1729
Gross, P., & O. Halpern, Debye theory of electrolytes, 2321
Gross, R., strengthening and recrystallisation, 26
Grotta, B., initiating explosives, 1520
Grover, F. W., circuits with circular symmetry, 1738
Grover, F. W., J. P. Das & J. H. Turnbull, ampère trough experiment, 1701
Grube, G., hydrogen overvoltage, 724
Grube, G., & M. Staesche, chemical equilibrium, 2399
Grünberg, G., relativity, 1830
Grüneisen, E., & E. Goens, metal crystals, 784
Grützmacher, M., dielectric constants, 211
Gruhl, M., Leclanché cell, 2188
Grumbach, A., photovoltaic elements, 1772
Grumbach, A., & S. Schlivitch, surface tension, 2411
Grunmach, L., & G. Schweikert, surface tension, 259
Gucker, F. T., Jr., & T. W. Richards, specific heats, 2312
Gudden, B., & R. Pohl, crystals, 662; electronic conduction, 2590; photoelectric primary current, 1967
Gudris, N., & L. Kulikowa, small drops of water, 384
Gueben, G., spectrum of radiant energy, 104
Güntherschulze, A., arc-lights with non-glowing kathode, 191; electrochemical normal potential, 1705; electrolysis with gas kathode, 1782; glow discharge, 184, 640, 2739; layer discharge, 1453; luminous discharge, 2740; mercury vacuum arc, 1704; positive ions, 1452; pseudo high vacuum, 1706
Güntherschulze, A., & E. Alberti, "Silit" resistances, 1476
Guérin, E., Optometer, 327
Guernsey, E. W., & M. S Sherman, fixation of nitrogen, 2626
Guéry, F., electric current, 917; moving electron, 399
de Guiche, A. de G., acoustic relative velocity indicator, 1290; optics, 1347
Guilbert, R. Petit, & M. Lemay, X-rays on organic ferments, 371
Guild, J., trichromatic mixture data, 2252; visual spectrophotometry, 2253
Guillaume, J., solar observations at Lyons Observatory, 73
Guillaume, J., & (Miss) Bloch, lunar eclipse of 14 August, 1924, 59
Guillet, L., & J. Galibourg, Herbert pendulum, 2002
Guillet, L., & A. Portevin, quenching, 1510
Gunnayya, D., A. L. Narayan & K. R. Rao, thallium vapour, 356
Gunnayya, D., & G. Subrahmaniam, spectral lines in prism spectroscope, 81; string vibration, 1158; underblown pipes, 1157
Gurney, R. W., ionisation by α-particles, 1714; stopping power of gases, 1681
Guthrie, R. V., Jr., dielectrics, 667
Gutton, C., & E. Pierret, stationary electromagnetic oscillations, 2584; valve oscillators, 2348
Guyot, J., metal and electrolyte, 971
Gyemant, A., fluid insulators, 2570; hydration of ions, 977
Gyllenberg, W., star-cluster ICN 4996, 2243
Gyulai, Z., absorption phenomena, 2483; quantum equivalent, 1968; photoelectric conduction, 1481

Haalck, H., earth's field, 2604; earth magnetic measurements, 1392B
Haase, O., & E. Schmid, metallic crystals, 2222
Hackspill, L., & R. Grandadam, displacement of alkaline metals by iron, 1255
Haddon, C. L., setting of cements, 1258
Hagenow, C. F., & A. L. Hughes, low-voltage excitation of spectrum of cæsium, 118
v. Hahn, F. V., colloids, 692
Hahnemann, W. M., sound waves, 1049B
Hak, J., mutual induction, 1491
v. Halban, H., undissociated acids, 830
v. Halban, H., & L. Ebert, optical absorption, 318; picric acid, 716
Hale, G. E., spectrohelioscope, 536
Hall, E. H., free electrons within a metal, 1324; metals in contact, 1725; transverse thermomagnetic effects, 2751
Hallimond, A. F., Oppau explosion, 231
Halpern, O., X-ray scattering, 1115
Halpern, O., & P. Gross, Debye theory of electrolytes, 2321
Halvorsen, H. O., & C. A. Mann, tungsten, 974
Ham, L. B, spectral lines, 2019

Havighurst, R. J., mercurous halides, 2015
Hamasumi, M., graphite in cast iron, 1243
Hamer, R., photoelectric thresholds, 205
Hammer, E., theodolite, 2255
Hammer, W., & H. Pychlau, α-rays of radium F, 585
Hammett, F. S., neutralisation, 1519
Hammett, L. P., & H. T. Beans, hydrogen electrode, 1996
Hammond, D. W., G. W. Trobridge & J. N. Friend, rate of solution, 2775
Hammond, L. D., nickel-depositing solutions, 980
Hampson, A., & E. L. Chaffee, retina, 812
Hampton, W. M., glass, 1135
Hamy, M., cadmium radiation, 558; stars and diameter of sun, 497; stellar radial velocities, 1596
Hancock, J. S., & A. F. Joseph, clay, 237
Hanle, W., resonance radiation, 839
Hanot, (Miss) M., Balmer lines, 1087
Hansen, G., photographic plates, 1355
Hanson, D., equilibrium diagram, 1511
Hanson, D., & (Miss) G. W. Ford, copper, 757
Hanson, E. T., drift of projectiles, 1805; optical diffraction, 1064
Hanyu, T., T. Nishiuchi & W. Ogawa, insulation varnish, 210
Hara, R., & H. Sinozaki, hydrocyanic acid, 2788; hydrocyanic acid saturated vapour-pressure, 1140
Hardy, A. C., sensitometer, 1344
Hardy, W., interfaces, 2193
Hardy, W., & I. Bircumshaw, boundary lubrication, 2414
Hargreaves, R., α-particle, 2527; radial accleration, 14
Haring, H. E., electrodeposition of metals, 1277*
Harle, J. A., and W. M. Thornton, electrolytic corrosion, 2779
Harmon, F. G., & F. N. Speller, corrosion, 2774
Harned, H. S., thermodynamics of cells, 2406
Harper, W. E., & R. K. Young, absolute magnitudes, 1847
Harris, F. C., glass, 755
Harris, H., dielectric constants, 2357
Harrison, G. R., absorption in sodium vapour, 566; photographic sensitometry, 2683; precision densitometers, 1345; sodium atom, 2097
Harrison, G. R., & G. S. Forbes, mercury-vapour lamp, 1178; mercury-vapour lamps, 2742
Harrison, G. R., & J. C. Slater, sodium spectra, 2699
Harrison, W. J., motion of spheres, 769
Hartig, H. E., low-velocity electrons, 2750
Hartree, D. R., atomic number, 1315; ionisation potentials, 185; reflection of X-rays, 2020; spectra, 846, 847
Hartshorn, L., dielectric absorption, 2151; mutual inductances, 1737
Hartshorn, L., & D. W. Dye, mica, 934
Hartshorne, N. H., transition points, 245
Hartung, E. J., silver bromide, 347
Harwood, Margaret, asteroids, 2035
Haslam, R. T., R. L. Hershey & R. H. Keen, gas absorption, 688
Haslam, R. T., W. G. Lovell and R. D. Hunneman, non-luminous flames, 1927
Hastings, C. S., telescope, 2475
Hatfield, W. H., stainless steel, 2784
Hatley, C. C., refraction of calcite for X-rays, 582
Hatschek, E., & R. H. Humphry, sols and gels of agar, 221
v. Hauer, F., entropy, 1697
Hausen, H., air temperature measurement, 894; C_v, U and equation of state, 1148; reciprocal theorem, 617
Havelock, T. H., wave resistance, 2217
Havighurst, R. J., diffracting power, 2714, 2715
Havighurst, R. J., W. Duane & Alice H. Armstrong, reflection of X-rays, 1907
Hayashi, K., virtual work, 779
Hazard, D. L., terrestrial magnetism, 1739
Hazen, Grace, & Frieda Kenyon, radio-frequency standardisation, 668
Heaps, C. W., galvanomagnetic phenomena in flames, 1201
Hebeisen, J., compressibility, 2207
Hecht, S., visibility of spectrum, 102
Heckmann, G., distorted ions, 1320; piezoelectricity, 2592
Hector, L. G., magnetic susceptibility of helium, neon, argon and nitrogen, 425
Hedestrand, G., evaporation of water, 614
Hedrick, A. F., & P. D. Sale, heat insulation, 896
Hedvall, J. A., solid phases, 710
Hée, (Miss), (Miss) Dammann, Bois, Lacoste & Rothé, Oppau and La Courtine explosions, 906
Heegner, K., disturbed superposition, 2362; systems with disturbed superposition, 173
Heike, W., & K. Ledebur, $(\alpha + \gamma)$ eutectic in brass, 436
Heimstädt, O., inelastic impact, 1796
Heindlhofer, K., steel, 468
Heinrich, W. W., three bodies, 1049, 2057
Heisenberg, W., multiplets, 2279; polarisation of fluorescent light, 1358
Heisenberg, W., & H. A. Kramers, scattering, 1632
Helderman, W. D., E. Cohen & A. L. T. Moesveld, specific heats, 597
Hellman, G., aqueous phenomena, 2033; dew and hoar-frost, 2237
Helmick, P. S., silver bromide, 346

Hemmeter, H., inductance of coils, 208
Henderson, J. B., gyro-compass, 1288
Henderson, J. P., time comparisons, 1784
Henglein, F. A., thermal expansion, 1919, 2536
Henning, F., coloured glass, 817
Henning, F., & W. Heuse, optical temperature scale, 2308; spectro-micropyrometer, 598
Henrard, " ribbon " microphone, 1037B
Henri, V., & M. C. Teves, molecular predissociation, 565
Henrijean, F., electro-cardiographs, 1982
Henriot, E., & E. Huguenard, high-speed rotation, 2013
Henriot, E., & R. Moens, thermionic effect, 1719
Henroteau, F., σ Cygni, 499
Henry, C., relativity, 796
Henry, D. C., & V. A. Morris, negative colloidal sol, 222
Hepperger, J., meteorites, 491
Hering, C., fundamental conductor, 690B
Hermans, P. H., organic molecules, 708
Herrick, J. S., H. K. Benson & T. Matsumoto, Portland cement, 699
Herrmann, K., photoelectric emission, 2572
Hershey, R. L., R. T. Haslam & R. H. Keen, gas absorption, 688
Herthel, E. C., W. V. Ischie, H. H. Lester & W. Mendius, flaws by X-rays, 25B
Hertz, G., neon resonance lines, 2706; slow electrons, 2139
Hertz, G., & R. K. Kloppers, excitation and ionisation potentials, 1712
Hertz, G., & J. C. S. de Visser, excitation of spectral lines, 1876
Herz, W., gas equations, 898
Herzfeld, K. F., & K. L. Wolf, classical dispersion formula, 1070; dispersion formula, 1854
Hesselberg, T., air movements, 1021
Hettner, G., oscillations of NH_3 molecule, 1372
Hettner, G., & M. Czerny, gas thermic slip, 900
Heubner, W., drop size, 1802
Heuse, W., & F. Henning, optical temperature scale, 2308; spectro-micropyrometer, 598
Hevesy, G., & V. Berglund, zirconium and hafnium, 244
Heymans, P., double-refraction with celluloid, 2666
Heymans, P., & N. H. Frank, time intervals, 1999
Heyrovský, J., electrode potentials of solvation, 1994; galvanic cells, 1769; mercury drop kathode, 1269; tension of electrolytic solution, 2196
Hickman, K. C. D., vision, 1316B
Hicks, W. M., spectra, 843
Hidnert, P., thermal expansion, 1426
Hidnert, P., & W. B Gero, molybdenum, 589
Highfield, A., sols and gels of agar, 221*
Higuchi, S., alums, 352
Hilberg, H., & E. Becker, passive state of metals, 1245
Hildebrand, J. H., & J. Simons, hydrogen fluoride, 388
Hill, L., biological action of light, 1849
Hill, R. A., photochemical decomposition, 93
Hill, R., & O. R Howell, crystal structure and absorption spectra, 24
Hinshelwood, C. N., chemical reactions, 2392
Hinshelwood, C. N., & C R. Prichard, carbon dioxide and hydrogen on tungsten, 2398; homogeneous and catalysed reactions, 2397
v. Hippel, A., thermo-microphone, 1931, 1932
v. Hippel, A., J. Friese & E. Waetzmann, thermo-microphone, 910
Hock, L., elastic properties, 1295
Hönl, H., Zeeman components, 1411
Hönl, H., & F. London, band lines, 2690
Hönl, H., & A Sommerfeld, multiplet lines, 1658
Hoenshel, H. D., R. M. Buffington & W. M. Latimer, low temperatures, 2117
Hoersch, V. A., conical horn, 1442, 1443
Hoffmann, F., canal rays, 2581
Hoffmann, G., high-altitude radiation, 1130
Hogg, G. R. D., vacuum vessels, 1133
Hogness, T. R., & E. G. Lunn, ionisation, 2746; ionisation of hydrogen, 636
Holborn, L., & J. Otto, helium, nitrogen and argon, 1146; isothermals, 2549
Hollenberg, A., colour-blindness, 516
Holler, H. D., electrode potentials, 1997
Holm, E., & C. Füchtbauer, ultra-violet light, 2095
Holm, E., C. Füchtbauer & F. Waibel, absorption line of iodine atom, 358; iodine atom, 1654
Holm, R., contact resistance, 1727; glow current, 639, 2335
Holmes, R. M., thermoelectric power of selenium, 2355
Holmgren, E., equation of heat, 168
Holtsmark, J., & B. Trumpy, spreading of spectral lines, 1640
Holtzmann, M., dew-point, 301; short sound waves, 1155
Holtzmann, M., & W. Altberg, absorption of sound waves, 1156
Holweck, F., L_3 line of argon, 1109; spectral frequencies, 1664
Honda, K., cold-rolling on hardness of copper, 1249*
Honnelaitre, A., & E. Darmois, ammonium di-molybdo-malate, 85
Hope-Jones, F., sun-clock, 2246
Hopkins, B. S., & E. A. Engle, metallurgy of beryllium, 1276

Hopkins, B. S., & A. W. Meyer, electrolytic production of beryllium, 1275
Hopkins, B. S., H. E. Steinert & M. C. Crew, solubility of yttrium salts, 1243
Hopkins, D. G., & J. W. McBain, adhesives, 1297
Hopkins, L. A., characteristic planets, 514
Horder, T , radiology, 430
Hornbeck, J. W., photoelectric response of potassium, 1198
Horovitz, K., crystal structure, 465 ; mixed electrodes, 2191 ; platinum, 728
Hort, W., fatigue, 954 ; natural notes of tapered rods, 1936 ; pump valve vibration, 17
Horton, P. M., & R. H. McKee, gold adsorption, 1228
Hovorka, F., & E. K. Carver, capillary rise, 1794
Howard, J. V., & S. L. Smith, tensile testing, 996
Howarth, J. T., & F. P. Burt, Boyle's law, 2123
Howell, O. R., & R. Hill, crystal structure and absorption spectra, 24
Howland, R. C. J., whirling speeds, 1801
Hoyt, F. C., Balmer series lines of hydrogen, 1391 ; electron orbits, 1326
Hubbard, J. C., & R. T. Cox, reflection and refraction, 2663
Hudleston, L. J., & J. D. C. Anthony, freezing-points of hydrofluoric acid, 2316
Hudson, J. C., solubility, 2168 ; X-ray spectrometers, 75
Hückel, E., strong electrolytes, 1267
Hückel, E., & R. Zsigmondy, colloidal gold sols, 2383
Hüttig, G. F., & M. Keller, chemistry of lithium, 2464
Hughes, A. L., & C. F. Hagenow, low-voltage excitation of spectrum of cæsium, 118
Hughes, A. L., & F. E. Poindexter, mercury-vapour trap, 2311
Hughes, C. W., & W. W. Coblentz, ultra-violet reflecting power of metals and sulphides, 518
Hughes, E., magnetic bridge, 2166
Huguenard, E., & E. Henriot, high-speed resistance, 2013
Huguenard, E., A. Magnan & A. Planiol, aerodynamic force, 772 ; aeroplane manœuvres, 2220 ; hot-wire altitude instruments, 1536 ; wind speed, 802
Hugues, R., electrolytic iron annealing, 2388
Hulburt, E. O., & G. Breit, momentum of electrons, 1325
Hull, A. W., electrons between coaxial cylinders, 2138
Hull, A. W., & N. H. Williams, shot-effect 1458
Hulthén, E., mercury band-spectrum, 1896
Humasen, M. L., C. G. Burwell & P. W. Merrill, stars of class Be, 2654
Humphreys, W. J., temperature lag of oceans, 807
Humphry, R. H., & E. Hatschek, sols and gels of agar, 221
Hund, A., ultra-radio frequencies, 941
Hund, F., polyatomic polar molecules, 1558 ; spectra, 2692
Hungerer, E., & J. Koenigsberger, plastic deformations, 1543
Hunneman, R. D., R. T. Haslam & W. G. Lovell, non-luminous flames, 1927
Hurwitz, E., acoustical test for hydrogen, 1935
Huthsteiner, H., & O. S. Duffendack, low-voltage arcs, 1450
Huxford, W. S., standing electric waves, 2142

Ibbs, T. L., thermal diffusion, 1690
Igarasi, I., quenched alloys, 437
Ikeuti, H., β-rays, 1916
Iliin, B., adsorption, 2372, 2617
Ince, E. L., stretched membrane, 1800
Ingall, D. H., tensile strength, 756
Inge, L., N. Semenoff & A. Walther, solid insulators, 2150
Ingersoll, L. R., thermal conductivity, 588
Ingersoll, L. R., & S. S. de Vinney, sputtered films of nickel, 2609
Ingham, A. E., & J. E. Jones, crystal potential constants, 1812
Ionescu, T. V., velocity of sound in liquids, 1153
Ippisch, dispersion of energy, 2727
Iredale, T., adsorption, 1755
Ireton, H. J. C., germanium spectrum, 857
Irvine, Edith, V. H. Stott & D. Turner, viscosity, 1792
Isbekow, W., decomposition potentials, 2379
Ischie, W. V., E. C. Herthel, H. H. Lester & W. Mendius, flaws by X-rays, 25B
Isely, F. C., Rochelle salt crystal, 665
Isgarischew, N., & S. Berkmann, polarisation in metal deposition, 1783
Isgarischew, N., & A. Pomeranzewa, gels, 1503
Isihara, T., copper-tin equilibrium diagram, 958
Ising, E., ferromagnetism, 1497
v. Issendorff, J., & W. Schottky, electric diffusion in gas, 1464
Itiki, S., T. Taguti & R. Sekiguti, sun-spots, 2660
Ives, H. E., arc characteristics, 921 ; alkali metals, 661 ; least mechanical equivalent of light, 1080
Ives, H. E., & A. L. Johnsrud, alkali metals and alloys, 660

Jablonski, A., & S. Pienkowski, fluorescence, 2662
Jachan, A., & A. Wehnelt, kathode fall, 1943
Jacob, P., & R. Kuhn, mutarotation, 339
Jacques, H., & J. M. Mullaly, diffusion of mercury, 782
Jaeger, F. M., & D. W. Dijkstra, isotopes, 35
Jäger, G., relativity, 1009
Jaeger, W., & H. v. Steinwehr, heat of combustion, 967
Jänichen, E., & F. Sauerwald, synthetic metallic bodies, 1507
Jaffé, G., gaseous diffusion, 408; non-ergodic systems, 1808
Jakob, M., German legal temperature scale and heat unit, 381; heat conductivity of metals, 146
Jaloustre, L., G. Danne, M. Demenitroux & A. Maubert, radio-active springs, 2535
Jaloustre, L., P. Lemay & A. Maubert, catalysis of liver, 1980
James, A. C., a.c. crystal rectification, 1962
James, R. W., Antarctic sea-ice, 47; reflection of X-rays, 1661
Jameson, A. Y., & H. J. Lucas, electron displacement, 290
Janakiram, A., & Y. Venkataramaiah, phototropically treated compound, 90
Janicki, L., Balmer series of hydrogen, 1885
Janitzky, A., gas contents of metals, 1482
Jannin, L., repeatedly reversed stresses, 750
de Jans, C., vortex line, 914
Japolsky, N., magnetic fields, 680
Jarry-Desloges, lunar halos, 1598
Jasper, T. M., & H. F. Moore, fatigue limits, 20B
Jauncey, G. E. M., Compton-effect, 1399, 1670, 2100
Jausseran, C., & H. Buisson, neon spectrum, 1388
Jazyna, W., reciprocal theorem, 1149, 1150; specific heat, 151
Jeans, J. H., ages and masses of stars, 496; cosmogony of systems of decreasing mass, 1025; electric forces and quanta, 1560; mass luminosity, 2455; mass luminosity law, 1599; radiative equilibrium, 2042; spiral nebulæ, 2041; stars, 2038
Jeffery, F. H., electrolysis of potassium oxalate, 1265
Jeffreys, H., bodily tide, 1020; cooling of earth, 1843; flow of water, 1803; solar system, 2044; warm Polar climate, 1835*
Jekhowsky, B., Alger N = 1924 QL, 65
Jelinek, H., & F. Jirsa, anodic gold oxidation, 729
Jenkin, C. F., metal fatigue, 2623
Jenkins, J. D., velocity of crystallisation, 1985
Jensen, A. G., microvoltage measurements, 2759
Jensen, A. G., & J. H. Morecroft, two-triode circuits, 140B
Jesse, W. P., ionisation, 2576
Jessop, G., & N. K. Adam, negative surface tensions, 2384
Jirsa, F., anode polarisation, 718
Jirsa, F., & H. Jelinek, anodic gold oxidation, 729
Job, P., complex compounds in solution, 1762; hydrolysis, 968; mercury complexes, 2385
Jobst, G., colloidal suspensions, 2062
Joël, E., & R. Zsigmondy, gold sols, 695
Joffé, A., & M. Lewitsky, elastic limits of natural rock-salt, 1298
Johansson, C. H., thermal expansion, 1684
Johlin, J. M., surface concentration, 1759
John, C. E. St., & W. S. Adams, convection currents in stars, 498
Johnson, F. M. G., & E. W. R. Steacie, viscosities, 1541
Johnson, J. B., Schottky-effect, 2571
Johnson, M. C., emission-line stars, 1032; spectral lines, 2083
Johnson, R. C., nitrogen spectrum, 872; spectra carbon, 2298
Johnsrud, A. L., & H. E. Ives, alkali metals and alloys, 660
Johnston, J., solubility, 2169
Johnston, J., & D. H. Andrews, metal equilibrium diagrams, 697
Johnston, J., & A. C. Walker, air and CO_2 mixtures, 2615
Jolliffe, C. B., modulation, 1207
Joly, J., & J. H. J. Poole, radioactivity of basalts, 373
Joly, M., deep therapy, 684
Jones, A. T., Helmholtz resonator, 1933, 1934
Jones, D. C., & W. A. Patrick, adsorption, 1224
Jones, E. R., & C. R. Bury, benzene, 2723
Jones, Hope-, F., sun-clock, 2246
Jones, H. S., figure of the earth, 809; moon's motion, 1046
Jones, I. C., condensation nuclei, 2541
Jones, J. E., helium and neon, 1003; molecular fields, 288, 289, 789
Jones, J. E., & A. E. Ingham, crystal potential constants, 1812
Jones, J. H., & J. C. Boyce, Rydberg-Ritz equation, 481
Jones, L. A., photographic spectrophotometry, 2075
Jones, L. T., & H. G. Tasker, kathode-ray oscillograph, 669
Jones, R. S., hygrometry in mines, 805
Jones, T. J., electrical resistance of mercury, 2149
Jones, W. J., & J. E. Myers, fractionating column, 991

Joos, G., diamagnetism, 2366; quartz glass, 78; spectral lines, 2082
Jordan, H., elastic after-working, 748
Jordan, L. H., & R. K. McClung, sensitive flames, 909
Jordan, P., atomic structure, 2432; excited neon, 1710; quantum radiation, 1081; vacuum radiation, 2640
Jordan, P., & M. Born, aperiodic processes, 2492
Joseph, A. F., & J. S. Hancock, clay, 237
Joshi, S. S., viscosity, 2004
Jouaust, R., heterochromatic photometry, 89
Jouaust, R., & G. Ferrié, oscillations of pendulums, 1538
Jouaust, R., G. Ferrié & R. Mesny, photoelectric cells, 2588
Jouaust, R., & P. Waguet, photoelectric photometry, 1353
Joyner, Mary C., Myrtle L. Richmond & F. H. Seares, Harvard-Groningen Durchmusterung, 2051
Judd, D. B., chromatic visibility coefficients, 2065; Maxwell disc, 818
Judin, E., microscope magnifying power, 531
Julius, W. H., photosphere, 312
Juvet, G., quanta, 1559

Kadel, B. C., rain gauge, 2236
Käppler, G., & F. Weigert, polarised fluorescence, 2489
Kahanowicz, Marya, & Ada Estrafalaces, coloured glasses, 323
Kahlenberg, H. H., & L. Kahlenberg, metallic tungsten, 2808
Kahler, H., band-spectra, 2086
Kahn, O., & H. Braune, mobility of ions, 966
Kalandyk, S., conductivity, 652
van de Kamp, P., & H. L. Alden, faint stars, 56; tenth magnitude stars, 506
Kanolt, C. W., production of cold, 591
Kapitza, P. L., α-ray tracks, 375
Kapitza, P., & H. W. B. Skinner, Zeeman-effect, 2502
Kar, K. C., compressibility, 2206
Kara-Michailova, E., & H. Pettersson, scintillations, 1615
Karssen, A., J. M. Bijvoet & N. H. Kolkmeijer, crystal structure, 282
Karssen, A., & H. Gerding, passivity, 1989
Karwat, E., vapour-pressure, 610
Karwat, E., & A. Eucken, condensed gases, 609
Karwat, E., A. Eucken & F. Fried, thermodynamic vapour - pressure equation, 165
Kasarnowski, L., direct and broken relative frequencies, 1210
Katsch, A., glowing kathode, 2140; valves, 924
Katz, J. R., swelling, 951; swelling phenomena, 1239
Katz, J. R., & H. Mark, swelling, 696, 2172; X-ray spectroscopy, 129
Kaupp, E., & R. Glocker, recrystallisation, 369
Kautsky, H., & O. Neitzke, spectra, 1366
Kayser, E., & B. Eck, simple gas laws, 2121
Keen, B. A., E. M. Crowther, J. R. H. Coutts & S. Odén, Odén-Keen recording balance, 736
Keen, R. H., R. T. Haslam & R. L. Hershey, gas absorption, 688
Keene, H. B., & G. Barlow, electrical contacts, 1735; radium tubes, 1419
Keesom, W. H., H. K. Onnes & L. Vegard, luminescence, 1892
Kelch, R., microphone, 1036B
Keller, M., & G. F. Hüttig, chemistry of lithium, 2464
Kemble, E. C., band lines, 1368
Kemp, C. N., X-ray analysis of coal, 370
Kendall, J., & J. F. White, isotopes, 478
Kennedy, A. M., & S. J. Lloyd, electrolytic calcium arsenate, 2407
Kennedy, R. J., fuel-air mixtures, 2722
Kennelly, A. E., electrical networks, 2761; three-terminal networks, 385B
Kenrick, F. B., C. S. Gilbert & K. L. Wismer, superheating of liquids, 594
Kenrick, F. B., K. L. Wismer & K. S. Wyatt, supersaturation of gases, 605
Kenyon, Frieda, & Grace Hazen, radio-frequency standardisation, 668
Kermack, W. O., & W. T. H. Williamson, suspensions, 1760
v. Kerner, F., palæoclimatology, 306
Ketchum, P. W., Bohr's correspondence principle, 479
Keyes, F. G., & J. A. Beattie, calorimeter, 154
Keyes, F. G., & F. W. Sears, Joule-effect for CO_2, 1435
Khastgir, S. R., & C. G. Barkla, scattered X-rays, 1116
Kidner, C. A., H. N Rowe, Jessie Fwald & S. Dushman, tungsten electron emission, 1717
Kieninger, O., & E. Wilke, activity coefficients, 2631
Kienle, H., Pleiades, 1586
Kienle, H., & P. ten Bruggencate, Pleiades, 55
Kiess, C. C., nitrogen spark spectrum, 1385; nitrogen spectrum, 2505
Kiess, C. C., W. F. Meggers & F. M. Walters, Jr., arc and spark spectra, 849
Kimball, H. H., solar radiation intensity, 489
Kimball, W. S., space charge, 1956
Kimura, M., enhanced lines, 2278
Kimura, M., & G. Nakamura, broadening of spectral lines, 101; enhanced lines, 2277; kathode spectra, 861, 862; H_α and H_β lines of hydrogen, 119

King, A. S., vanadium spectra, 858
King, E. S., earthlight, 1042
King, J. F., & S. P. Smedley, vaporisation, 385
Kingdon, K. H., electron emission, 645
Kingdon, K. H., & I. Langmuir, thermionic effects, 1182
Kingslake, R., nephelometer, 2068
Kingslake, R., & L. C. Martin, chromatic aberration, 333
Kirchner, F., glow discharge, 2569
Kirkpatrick, P., mapping magnetic vector fields, 424
Kirsch, G., atomic disintegration by α-rays, 2305; retrograde H-particles, 2115
Kirsch, G., & H. Pettersson, atomic disintegration, 586, 1679
Kirst, L. A., & W. E Erickson, corrosion-resisting alloys, 2781
Kleeman, R. D., & C. R. Pitts, electrical layer, 1987
Kleine, H., resistance of platinum and iron wire, 2353
Kleitman, N., & H. Piéron, vision, 1339
Klemensiewicz, Z., conductivity of chlorides, 435
Kloppers, R. K., & G. Hertz, excitation and ionisation potentials, 1712
Klopsteg, P. E., surface tension, 742
Klopsteg, P. E., & W. H. Stannard, photographic recorder, 340
Knobel, M., polarised electrodes, 982
Knoch, K., air over Atlantic Ocean, 2448
Knudsen, V. O., speech reception, 2553
Kobayashi, K., & H. Nukiyama, induction coil, 673
Koch, P. P., & R. Blunck, Debye-Scherrer-Ringen, 2682
Koch, P. P., & H. Vogler, silver halides, 2686
Kockel, L., dielectric constants, 2757
Köhler, H., clouds, 1838
Koenigsberger, J., & F. Hungerer, plastic deformations, 1543
Koernicke, E., heat of dissociation of Hg molecules, 2318
Kohlschutter, V., electrodeposition of metals, 1277
Kolkmeijer, N. H., J. M. Bijvoet & A. Karssen, crystal structure, 282
Koller, L. R., electron emission, 1948
de Kolossowsky, N., critical temperature of liquids, 1920
Koltschin, N. J., equations of state, 1151
Kondratjeff, V., ionisation of salt vapours, 1954
Kopaczewski, W., colloids, 219
Koref, F., crystal recovery, 2223
Koref, F., & H. Fischvoight, metal crystals, 2624
Korotkewitsch, V., wind, 1019
Kossel, W., & C. Gerthsen, sodium light, 2481
Kottler, F., diffraction, 523
Kovarik, A. F., & L. W. McKeehan, radio-activity, 1912
Kraemer, E. O., & A. J. Stamm, emulsions, 1238
Kramers, H. A., & W. Heisenberg, scattering, 1632
Krasnikow, A., & N. Seljakow, K_β doublet, 2522
Krasnikow, A., N. Seljakow & L. Strutinski, glass, 2433
Kratzer, A., & E. Sudholt, resonance spectrum of iodine vapour, 2291
Kraus, C. A., radical theory in modern chemistry, 292
Krefft, H., Doppler-effect, 410
Kreitmeyer, E., physical quantities, 1017
Kretchmar, G. G., & S. H. Anderson, tungsten arc, 2741
Krethlow, A., optical properties, 2470
Kretschmann, E., super-conductivity, 207
Kriegesmann, L., X-radiation, 2103
Kriegesmann, L., & L. Grebe, ionisation of X-rays, 368
v. Kries, J., colour theory, 815
Kriloff, A. N., parabolic orbits, 2058
Kröger, M., & M. le Blanc, solid electrolytes, 2405
Kronig, R. de L., conductance of selenium, 653; multiple lines, 1879, 2283; quantum radiation, 350; stopping of α-particles, 2528
Kronig, R. de L., & S. Goudsmit, Zeeman components, 2708
Krüss, H., depth of images, 2070
Kruyt, H. R., & H. J. C. Tendeloo, emulsoid sols, 433
Krynitsky, A. I., & H. S. Rawdon, corrosion testing, 2778
Kudar, J., spectral lines, 1365; two bodies, 1832
Kuhn, R., isoelectrical points, 984
Kuhn, R., & P. Jacob, mutarotation, 339
Kuhn, W., absorption lines, 2289
v. Kujawa, G., & E. Stenger, photographic blackening, 834
Kulikowa, L., & N. Gudris, small drops of water, 384
Kunze, W., & S. Loewe, valve ohmmeter, 1485
Kurtz, C. M., & R. J. Zaumeyer, corrosion, 2780
Kuwashima, T., & H. Nukiyama, triode valve resistance amplifier, 1208

van Laar, J. J., van der Waals equation of state, 2550
Labes, R., sediments, 2194
Lacoste, (Miss) Hée, Bois, (Miss) Dammann & Rothé, Oppau and La Courtine explosions, 906
Lacoste, J., microseismic disturbances, 48
Lafay, A., precision refractometer, 1346
Laffay, J., mercury spark spectrum, 1648
Laffitte, P., explosive wave, 890
Lafontaine, (Miss) L., C. Caspar & V. Auger, salts of cupferron, 1521
Lafuma, H., corresponding temperatures, 166

Lagally, M., non-planar membranes, 749
Laing, Mary E., soap films, 2620
Laissus, J., Fe-Cr cement, 2386
Lamb, H., geophysics, 2645
Lambert, B., & S. F. Gates, hydrogen and palladium, 2373
Lambert, P., & D. Chalonge, recording microphotometer, 1625
Lampland, C. O., & W. W. Coblentz, planetary radiation, 2245
Lanczos, K., ether radiation, 1573, 1574; gravitation, 1571; stationary electronic orbits, 2425
Lanczos, T., relativity, 1831
Landé, A., "dashed" and displaced terms in spectra, 110; Planck's law, 2546; Zeeman-effect, 1100, 1106
Landé, A., O. Laporte & G. Wentzel, "dashed" terms in spectra, 1363
Lang, K., X-ray constants, 366
Lang, R. J., ultra-violet spark spectra, 1376
Lange, E., & J. Wüst, heats of solutions, 599, 2319
Lange, H., metallic alloys, 1763; X-ray apparatus, 1911
Lange, Luise, dielectric constants, 2756
Langmuir, I., & K. H. Kingdon, thermionic effects, 1182
Laporte, O., G. Wentzel & A. Landé, "dashed" terms in spectra, 1363
Lapp, C., hysteresigraph, 2612
Lardry, M., short waves, 2144
Lardry, P., short waves, 198
Larmor, J., electric rays round the earth, 428B
Larsson, A., & M. Siegbahn, multiply ionised molybdenum, 577
Lasareff, P., magnetic anomaly, Koursk, 423
Lassé, R., H. Ginsberg & W. A. Roth, micro-calorimeter, 153
Lassé, R., & W. A. Roth, micro-calorimeter, 895
Lassieur, A., electrolytic separation, 241, 459
de László, H., ultra-violet ray absorption, 1055
Latimer, W. M., R. M. Buffington & H. D. Hoenshel, low temperatures, 2117
Lattès, Mrs. J. S., radio-active radiations, 2109; radium radiation, 1674
Lattey, R. T., sulphuric acids a.c., 2598
Lau, E., positive hydrogen column, 2285
Lau, E., & E. Gehrcke, hydrogen spectrum, 1884
v. Laue, M., mechanical transformability, 2128; spark discharge time of lag, 1174
Launert, A., & T. Peczalski, cementation of copper, 440
Laurie, A. P., magnetic theory of valency, 293
Laville, G., electromagnetic waves, 199
Lawrence, E. O., photoelectric effect, 2339
Lax, E., & I. Runge, output of light, 2499
Leauté, A., electric waves, 927
Lebeau, P., & M. Picon, diamond transformation, 893
Lecomte, J., absorption spectra, 1647
Ledebur, K., & W. Heike, $(\alpha + \gamma)$ eutectic in brass, 436
Ledig, W., & W W. Loebe, tungsten arc, 2671
Leduc, A., equation of state of gases, 1436
Lee, H W., Taylor-Hobson F/2 anastigmat, 527; telephotographic lens, 2259
Lees, S., flow of gas in two dimensions, 158
Legros, L., wave-forms, 672
Lehmann, J. F., & T. H. Osgood, electrons, 2338
Lehmann, T., W. Thomson's (Kelvin's) theorem, 1213; magnetic constraint, 1496
Leiss, C., spectral apparatus, 1851
Lejeune, G., & C. Marie, supertension of hydrogen, 220
Lemay, M., Guilbert & R. Petit, X-rays on organic ferments, 371
Lemay, P., L. Jaloustre & A. Maubert, catalysis of liver, 1980
Lémeray, spherical mass systems, 1567
Lemon, H. B., "comet-tail" spectrum, 1407
Lemon, H. B., & C. M. Blackburn, quantum transitions, 2689
de Lenaizan, B., & J. Granier, specific inductive capacity of ice, 1164
Lenouvel, L., lenses, 2478
Lenz, H., photoelectric primary currents, 2755
Leontowicz, M., equilibrium principle of G. N. Lewis, 2390
Lepape, A., radio-activity springs, 2717
Lester, H. H., E. C. Herthel, W. Mendius & W. V. Ischie, flaws by X-rays, 25B
Lenz, H., Hall-effect, 202
Letzmann, J., depressions, 2031; travelling depressions, 1578
Leuschner, A. O., object Baade, 1043
Levi, G. R., isomorphism of litharge, 786; lead and thallium, 22
Levi, G. R., & G. Bruni, solid solutions, 1504
Levi, G. R., & A. Ferrari, crystalline reticuli, 23
Levi, (Miss) M., X-rays, 873
Levi-Civita, T., irrotational waves, 770
Levy, L. A., & D. W. West, X-ray fluorescent screens, 2613
Lewicki, G., & H. Barkhausen, ear, 622
Lewis, D., temperature indicator tester, 593
Lewis, G. N., magnetism of oxygen, 215; new principle of equilibrium, 1766; thermal radiation, 2726; ultimate rational units, 1546

Lewis, G. N., & D. F. Smith, reaction rate, 2180
Lewis, J. R., viscosity of liquids, 1542
Lewis, J. W., & E. N. da C. Andrade, fluid motion, 252
Lewis, T., Bucherer's experiments on e/m, 1562
Lewis, W. K., & W. G. Whitman, gas absorption, 686
Lewitsky, M., & A. Joffé, elastic limits of natural rock-salt, 1298
Lewschin, W. L., surface tension, 258; unsymmetrical membranes, 2731
Ley, H., & F. Volbert, absorption in the ultra-violet, 520
Liana, F., transparency of glass, 1623
Lichtenecker, K., conducting mixtures, 1193; resistance with temperature, 654
Liebreich, E., & W. Wiederholt, nickel and aluminium current-voltage curves, 1271
Liebster, H., & L. Schiller, spheres in viscous fluid, 1303
v. Liempt, J. A. M., & W. Geiss, metals of great purity, 2179
Liénard, A., electromagnetic laws, 631
Liesegang, R. E., hydrogen ions in gels, 223
Lind, S. C., & D. C. Bardwell, radon, 136
Lind, S. C., & R. V. Wheeler, ignition of gases, 233
Lindau, P., second positive nitrogen band group, 1094
Lindh, A. E., K Röntgen-ray absorption spectra, 1398
Lindman, K. F., electromagnetic waves, 2585
Lindow, W., & R. Seeliger, glow discharge, 2293
Lindsay, R. B., series spectra, 2639
Liouville & Gossot, interior ballistics, 1685
Littlewood, J. E., trajectories in a resisting medium, 11
Livens, G. H., dia-, para- and meta-magnetism, 1212
Livens, G. H., & E. L. Davies, metallic conduction, 1724
Livingston, R. S., & W. C. Bray, catalysis, 2791
Lloyd, S. J., & A. M. Kennedy, electrolytic calcium arsenate, 2407
Lockyer, W. J. S., broadening spectra, 820; ϕ Persei (type BOpe), 2047
Lodge, O., matter and radiation, 1328
Loeb, L. B., gas ion mobilities, 1469
Loeb, S., & G. M. Schwab, nitric oxide, 638
Loebe, W. W., & W. Ledig, tungsten arc, 2671
Löber, H., parallel cylindrical electrodes, 2135
Lönnqvist, C., meteorites, 800
Loewe, S., & W. Kunze, valve ohmmeter, 1485
Logan, A., photomicrography, 1356; propeller brass, 953
Logan, K. H., electrolytic corrosion, 346B
Lohr, E., Gaumann's theory of gravitation, 1011
Loisel, P., radio-activity of Guérat granite, 374
London, F., & H. Hönl, band lines, 2690
Long, F. A., & R. Whiddington, microbalance, 1286
Long, R. G., & W. E. Curtis, band-spectrum of helium, 2288
Lorentz, H. A., motion of electricity, 2556
Lorenz, H., turbulence, 2422
Loring, F. H., meteors, 2658
Loughborough, G. T., acute X-ray burns, 2371
Loveland, R. P., S. E. Sheppard & A. P. H. Trivelli, photographic sensitivity, 2269
Lovell, W. G., R. T. Haslam & R. D. Hunneman, non-luminous flames, 1927
Lowe, P., & D. C. Rose, argon spectrum, 864
Lowery, H., broadening of lines, 1878; interrupted arc spectra, 851
Lowry, H. H., & S. O. Morgan, vapour pressures of Rochelle salt, 386
Lowry, T. M., & H. S. French, absorption spectra of cupric compounds, 360
Lowry, T. M., & E. M. Richards, organic compound rotatory power, 1073; rotatory dispersive power, 86
Lowy, A., & R. F. Dunbrook, electrolytic oxidation of p-nitrotoluene, 1273
Lowy, A., & K. S. Tesh, salicylic aldehyde, 981
Lucas, H. J., & A. Y. Jameson, electron displacement, 290
Lucas, R., rotatory power, 2264
Lucasse, W. W., activity coefficients, 1771
Luckiesh, M., & F. K. Moss, visual acuity, 1616
Ludlam, E. B., & W. West, ionisation by iodine vapour, 1715; ultra-violet emission spectra, 114
Lübeck, G., impact, 2210
v. Lüde, K., & R. Suhrmann, specific heat of bromine, 382
Lüppo-Cramer, emulsion ripening, 836; latent fog, 1865; latent image, 1861; latent [photographic] image, 832; silver, 2485; solarisation, 554
Lütkemeyer, H., & M. Bodenstein, hydrogen bromide, 831
Lukirsky, P., S. Ščukareff & O. Trapesnikoff, electrolysis of crystals, 1780
Lundmark, K., curvature of space-time, 42
Lunn, E. G., & T. R. Hogness, ionisation, 2746; ionisation of hydrogen, 636

Lunt, J., chlorine and germanium spectra, 856; germanium spectrum, 855
Lunt, R. W., high-frequency a.c. corona, 1992; high-frequency corona discharge, 1993
Luyten, W. J., luminosity curve, 1041; luminosity distribution law, 2655; mean absolute magnitudes, 1602; M stars, 1592
Luyten, W. J., & E. B. Wilson, parallaxes, 2049; statistical distribution of stellar mass, 495
Lyon, A J., & E. H. Dix, Jr., aluminium alloys, 956
Lyon, N., electrical double refraction, 74
Lyot, B., light from Mars, 2060; polarisation of light, 60; Saturn, 1044

van Maanen, A., proper motion, 1595
Maass, O., & D. M. Morrison, Dalton's Law, 899
McAulay, J., & P. Debye, neutral salt action, 1527
McBain, J. W., soaps, 2175; sols and gels of agar, 221*
McBain, J. W., & D. G. Hopkins, adhesives, 1297
McCallum, S. P., & C. M. Focken, neon, hydrogen and nitrogen, 2137
McClung, R. K., & L. H. Jordan, sensitive flames, 909
McCorkle, P., anhysteretic magneto-strictive effects, 1745
McCurdy, W. H., striated discharge in mercury-vapour, 196
McCurdy, W. H., A. Turner, and K. T. Compton, striated glow discharge, 1171
Macdonald, H. M., reflected electric waves, 2586
McDougall, S. R., & W. F. Seyer, lubrication, 743
McHaffie, I. R., J. W. Shipley, and N. D. Clare, corrosion, 1984
MacInnes, D. A., transference numbers, 2627
MacInnes, D. A., & T. B. Brighton, transference numbers, 1773
MacInnes, D A., & E. R. Smith, transference numbers, 1774
Mackay, C. A., multi-atomic gases, 407
McKay, R. J., corrosion, 1231
McKee, R. H., & P. M. Horton, gold adsorption, 1228
McKeehan, L. W., ferro-magnetism, 2764
McKeehan, L W., & O. E. Buckley, permalloy, 2763
McKeehan, L. W., & P. P. Cioffi, demagnetisation, 681
McKeehan, L. W., & A. F. Kovarik, radio-active colloidal particles, 1912
McLay, A. B., & J. C. McLennan, series spectrum of gold, 2299
McLay, A. B., J. C. McLennan, & J. F. T. Young, lead spectra, 868; tin spectra, 867
McLennan, J. C., helium gas, 393
McLennan, J. C., & A. B. McLay, series spectrum of gold, 2299
McLennan, J. C., & W. W. Shaver, silicon spectra, 865
McLennan, J. C., & G. M. Shrum, auroral spectrum, 2287; hydrogen secondary spectrum, 871
McLennan, J. C., J. F. T. Young & A. B. McLay, lead spectra, 868; tin spectra, 867
Macleod, D. B., evaporation, 2120; viscosity, 988
McMahon, A. M., & F. C Brown, selenium crystal bridges, 2760
McMinn, Jean, & W. Rosenhain, plastic deformation, 2212
McTaggart, H. A., gas in water, 972
McVicker, W. H., J. K. Marsh & A. Stewart, tesla-luminescence spectra, 115, 116, 2090
Mader, K., Eötvös balance, 1284
Maggini, M., brightness on a star disc, 69
Magini, R., electric discharge, 2333
Magnan, A., A. Planiol, & E. Huguenard, aerodynamic force, 772; aeroplane manœuvres, 2220; hot-air altitude instruments, 1536; wind speed, 802
Malet, H., variation of mass, 1309
Mali, S. B., vapour-pressure, 2125
de Mallemann, R., diffusion of light, 2265; electrical birefringence, 2073; rotatory power, 2471
Mallik, D. N., quantum theory postulates, 2642; stability of the atom, 286
Malmquist, K. G., stellar distribution in space, 2242
Malquori, G., ozone, 973
Malsch, J., & M. Wien, electrolytic resistances, 657
Manchot, hydrogen overvoltage, 724*
Mandell, W., & J. West, temperature gradient in gases, 1144
Manoff, G., gravitation, 1572, 2233
Mankenberg, E., microscopy, 532
Manley, J. J., Sprengel pump, 1789
Mann, C. A., & H. O. Halvorsen, tungsten, 974
Mant, R., meteorology of India, 2238*
Marcelin, A., surface solutions, 2374
March, A., X-ray spectra, 874
Mardles, E. W. J., colloids, 694
Marie, C., & G. Lejeune, supertension of hydrogen, 220
Mariolopoulos, E. G., rain during anticyclones, 1014
Mark, H., & J. R. Katz, swelling by absorption, 696, 2172; X-ray spectroscopy, 129
Mark, H., & L. Szilard, X-radiation, 2521
Mark, H., & S. Tolksdorf, X-radiation, 2523
Markgraf, H., atmospheric electricity, 303
Markgraf, H., & C. Schall, electrolytic oxidation of cobalt, 976

Marre, F., time signals, 2452; wireless telephony and semi-deaf, 922B
Marriage, E., telephotographic lens, 2260
Marsh, J. K., band-spectra of aromatic compounds, 1899, 1900
Marsh, J. K., W. H. McVicker & A. W. Stewart, Tesla-luminescence spectra, 115, 116, 2090
Marshall, A. L., hydrogen and chlorine, 2394
Marshall, Dorothy, & T. E. Stanton, skin friction, 255
Marshall, M., low-voltage mercury arcs, 641
Marshall, Sybil, & J. O. C. Vick, emission of heat, 2543
Martin, L. C., colour, 1050; testing telescope object glasses, 332
Martin, L. C., & S. A. Emerson, sensitivity of fovea, 2250
Martin, L. C., & R. Kingslake, chromatic aberrations, 333
Martin, L. H., & E. C. Stoner, absorption of X-rays, 1666
Martin, W. S., & E. M. Crowther, hard tap-waters, 455
Márton, L., absorption spectra, 2512
Marvin, C. F., systematically varying period, 803*
Marx, E., gradient of travelling waves, 138B; ionisation, 2577
Masaki, O., photographic plates, 94
Masing, G., volume change, 754
Masing, G., & M. Polányi, tenacity of zinc, 261
Masius, M., ballistic galvanometers, 1484
Mason, C. W., temper colours, 317
Mason, W., & R. V. Wheeler, ignition of gases, 234
Masson, I., & G. A. Elliott, gaseous mixtures, 2322
Mastin, H., & F. Fairbrother, electro-endosmosis, 1263, 1530
Masumoto, H., aluminium alloys, 939B
Mathews, J. H., B. H. Carroll & G. K. Rollefson, ebullioscopic measurements, 2315; partial pressures of liquid mixtures, 2314
Mathews, J. H., & R. V. Williamson, absorption of carbon dioxide, 689
Mathewson, C. H., physical metallurgy, 1248
Mathias, E., ball lightning, 181; new magnetic network of France, 683
Matsumoto, T., J. S. Herrick & H. K. Benson, Portland cement, 699
Mattauch, J., motion in gas, 2009; spherical particles in gas, 775
Matteini, C., thermionic tubes, 217
Matthies, K., & F. Strecker, reciprocal relations in a.c. circuits, 674
Maubert, A., L. Jaloustre, G. Danne & M. Demenitroux, radio-active springs, 2535
Maubert, A., L. Jaloustre & P. Lemay, catalysis of liver, 1980
Mauchly, S. J., sea-air radium emanation, 885
Maurain, C., La Courtine explosion, 907
Maurain, C., E. Salles & G. Gibault, atmospheric conductivity, 2332
Mauz, E., & R. Seeliger, glow discharge, 1172
Maxwell, A. D., minor planet YO 11, 1045
May, O. E., & J. F. T. Berliner, vapour-pressure, 2728
May, R., & G. D. Bengough, absorption of carbon dioxide, 690
Mayer, H., chlorine dioxide absorption spectrum, 567
Mayneord, W. V., S. W. J. Smith & A. A. Dee, magnetism of annealed carbon steels, 1216
Mecke, R., band-spectra, 109, 1369, 1646, 2275
de Meester, W. A. T., A. L. T. Moesveld & E. Cohen, piezo-chemical studies, 949; solubility, 2376
Meggers, W. F., arc spectrum of columbium, 852; ionised vanadium spectrum, 2509; periodic law and spectra, 1364; platinum metal spectra, 1375; scandium and yttrium spectra, 563
Meggers, W. F., R. L. Chenault & P. D. Foote, solid targets, 351
Meggers, W. F., C. C. Kiess & F. M. Walters, Jr., arc and spark spectra, 849
Mehl, R. F., pure alloys, 2785
Meidinger, W., photographic blackening, 835
Meissner, A., electric waves round the earth, 429B
Meissner, K. W., absorption in excited neon, 1188
Mendius, W., E. C. Herthel, W. V. Ischie, & H. H. Lester, flaws by X-rays, 25B
Menges, C. L. R. E., kinematics, 1614
Menzel, D. H., stellar spectra, 1584
Menzies, A. C., screening-constant, 2496
Mercier, P. H., & J. Chadwick, β-rays, 2112
Merland, A., examining optical systems, 336
Merrill, P. W., P Cygni, 2649
Merrill, P. W., M. L. Humason & Cora G. Burwell, stars of class Be, 2654
Merritt, E., iridescent colours, 2661; selenium contact rectifiers, 2753
Merté, W., caustics, 2477
Merton, T. R., ultra-violet spectrophotometry, 355
Merton, T. R., & J. G. Pilley, spectrum of nitrogen, 1371
Mesny, R., polyphase oscillations, 2582
Mesny, R., G. Ferrié & R. Jouaust, photoelectric cells, 2588
Metz, A., E. Brylinski, Michelson experiment and relativity, 483

Meyer, A. W., & B. S. Hopkins, electrolytic production of beryllium, 1275
Meyer, E., binaural audition, 1929
Meyer, E. H. L., dielectric constants, 935
Meyer, S., susceptibility of rare earths, 1220
Meyer, U., Krarup conductors, 938; Krarup lines, 1484B
Michaelis, L., & M. Mizutani, hydrogen electrode, 238; weak electrolytes, 2192
Michailova, Kara E., & H. Pettersson, scintillations, 1615
Michalek, J. C., & W. H. Rodebush, atomic heat capacities, 2721
Michelson, A. A., velocity of light, 524
Michelson, A. A., H. G. Gale, F. Pearson, velocity of light, 2025
Mie, G., braked-down radiation, 2515
Miethe, A., gold from mercury, 1509
de Miffonis, H., periodoscope, 68
Mikola, S., solid dielectrics, 1966
Milch, W., wind, 2032
Miller, C. C., Stokes-Einstein diffusion law, 949
Miller, D. C., ether-drift, 2438
Miller, R. F., optical constants, 2066
Miller, W. L., electrolysis of copper salts, 2200
Millikan, R. A., divisibility of electron, 2559; light quantum, 2027
Millikan, R. A., & I. S. Bowen, Bohr atom, 31; electron orbits, 1825; lines due to two-electron jumps, 2300; *pp'* groups, 2495; series spectra, 2697; stripped atoms, 1902; two-valence-electron atoms, 1903; X-ray doublet separations, 135; X-ray laws, 1396
Millington, W. E. W., & F. C. Thompson, plastic deformation of metals, 753
Milne, E. A., calcium chromosphere, 1034; dissociation equilibrium, 1610; Fraunhofer lines, 2457; radiation pressure, 2458; Saha's ionisation formula, 2575; stellar absorption, 2459; theorem of virial, 2213
Mishima, T., H. Nagaoka, & Y. Sugiura, isotopes, 33
Mitchell, A. C. G., activation of hydrogen, 2787
Mitchell, S. A., & H. L. Alden, Pleiades, 2053
Mitra, N. G., D. L. Shrivastava, S. S. Bhatnagar & M. Prasad, resistance films, 2752
Miyagi, O., air-lift pump, 740
Miyazaki, T., rotary electric field, 2736
Mizutani, M., & L. Michaelis, hydrogen electrode, 238; weak electrolytes, 2192
Möbius, W., vapour, 1434
Moeller, H., telescope, 2472
Moens, R., & E. Henriot, thermionic effect, 1719
Moerikofer, W., aluminium spectrum, 870
Moesveld, A. L. T., & E. Cohen, equilibria, 2782
Moesveld, A. L. T., E. Cohen & W. A. T. de Meester, piezo-chemical studies, 949; solubility, 2376
Moesveld, A. L. T., W. D. Helderman & E. Cohen, specific heats, 597
Moffitt, G. W., & P. B. Taylor, binocular telescope, 2473
Mohler, F. L., alkali spark spectra, 2089
Mohler, F. L., & P. D. Foote, photoelectric ionisation, 2747
Mohorovičić, S., turbulent motion, 1302
Mokroushin, S., molecular diameters, 37
Moles, E., fundamental atomic weights, 1550
Mondain, P, & J. Risler, radio-dermites, 1749
Montefinale, G., thermionic tubes, 216
Mònterin, U., glaciers, 309
Montillon, G. H., & N. S. Cassel, nickel-plating baths, 975
Moore, H., cold-rolling on hardness of copper, 1249
Moore, H. F., & T. M. Jasper, fatigue limits, 20B
Moore, J. H., binary stars, 1028
Moose, J. E., & S. W. Parr, heats of oxidation, 963
Morecroft, J. H., & A. G. Jensen, two-triode circuits, 140B
Morecroft, J. H., & A. Turner, electric and magnetic shielding, 1699B
Morey, G. W., corrosion, 1984
Morgan, C. L., optical records, 324
Morgan, J. D., gas ignition by electric sparks, 1468
Morgan, S. O., & H. H. Lowry, vapour-pressures of Rochelle salt, 386
Morison, C. G. T., settling of suspensions, 2380
Morrell, J. H., & E. W. B. Gill, short electric waves, 1471
Morris, V. A., & D. C. Henry, negative colloidal sol, 222
Morrison, D. M., & O. Maass, Dalton's law, 899
Morse, S., & H. Fricke, conductivity of disperse systems, 1474
Morton, W. B., & Amy I. Woods, air waves, 161
le Morvan, C., & C. Nordmann, variable stars, 2036
Mosharrafa, A. M., degenerate systems, 1312
Moss, F. K., & P. W. Cobb, eye fatigue, 1315B
Moss, F. K., & M. Luckiesh, visual acuity, 1616
Mouillac, R., Herbert pendulum, 2091
Moureu, C., calorimetric bomb, 1431
Moureu, C., & C. Dufraisse, poisoning of oxidising catalysts, 1259
Müller, A., shape of blue sky, 487; X-ray spectrograph, 2513

Müller, A., & W. B. Saville, long-chain compounds, 1557
Müller, Emma, capillarity, 1294
Müller, F., constants of oscillating circuits, 1722 ; electric strength and discharge, 209
Müller, M., X-ray emission and discharge, 134
Müller, W., vortex sheets, 774
Mukherjee, J. N., & H. L. Ray, absorption, 1500
Mullaly, J. M., & H Jacques, diffusion of mercury, 782
Mulliken, R. S., band of unusual structure, 1888 ; band-spectra, 1367 ; electronic states, 840 ; isotope effect, 1649, 2707
Mulot, M., moiré fringes, 2263
Myers, J. E., & W. J. Jones, fractionating column, 991
Myrbach, O., atmosphere, 1012

Nádai, A., plastic bodies, 751 ; stressed solid bodies, 10
Nagaoka, H., & Y. Sugiura, isotopy, 34 ; metal arcs, 850
Nagaoka, H., Y. Sugiura & T. Mishima, isotopes, 33
Naish, W. A., Ag partition coefficient, 2786
Nakamura, G., spectra of mercury, 127
Nakamura, G., & M. Kimura, broadening of spectral lines, 101 ; enhanced lines, 2277 ; H_α and H_β lines of hydrogen, 119 ; kathode spectra, 861, 862
Nakamura, H., X-ray analysis of electrolytic brass, 2177
Nakamura, S., & Y. Fujioka, spark lines of carbon, 2292
van Name, R. G., & F. Fenwick, dissimilar electrodes, 1268
v. Náray-Szabó, S., & E. Brummer, anodic purification of mercury, 1528
Narayan, A. L., D. Gunnayya & K. R. Rao, thallium vapour, 356
Narayan, A. L., & G. Subrahmaniam, electrically luminescent potassium vapour, 357
Narbutt, J., atomic vibration frequency, 2310
v. Nardroff, R., & B. Davis, refraction of X-rays, 579
Nathanson, J. B., solid cæsium, 1052
Naumann, H., spectral white light filter, 2465
Nechvile, V., proper motions of stars, 2646
Nectoux, A., lenses, 2476
Neitzke, O., & H. Kautsky, spectra, 1366
Nelson, J. M., & A. M. Collins, electrolytic introduction of alkyl groups, 460
Netchaewa, N., & A. Predwoditelew, dyes, 663
Netschajewa, N., & A. Predwoditeleff, dyes, 1860
Neumann, B., & H. Richter, potential of alkali metals, 2198, 2199
Neumann, B., & E. Zöllner, vacuum evaporators, 1134
Neumann, F., tabular quantities, 429
Newbery, E., overvoltage, 1776
Newitt, D. M., D. T. A. Townend & W A. Bone, gaseous combustion, 2403
Newman, F. H., aluminium valve, 1971 ; low-voltage arcs, 1941, 2568 ; sodium spectrum, 2294
Nichols, E. F., & J. D. Tear, electric-wave spectra, 1373
Nichols, E. L., neodymium oxide, 1381
Nichols, H. W., & J. C. Schelleng, radio waves over the earth, 1723
Nicholson, J. W., celestial spectra, 1387 ; oblate spheroidal harmonics, 1306 ; secondary spectrum of hydrogen, 1886 ; spheroidal wave-functions, 992
Nicolai, E. L., radiation pressure, 995
Nicolau, P., thermoelectric properties of steels, 2591
Nielsen, J. R., photoelectric effect, 1197
Niessen, K. F., atoms with two degrees of freedom, 557
Nightingale, Dorothy, R. T. Dufford & S. Calvert, chemi-luminescent spectra, 845
Nikitin, N., magnetic spectra, 422
Nishina, Y., L-absorption spectra, 1655
Nishiuchi, T., T. Hanyu & W. Ugawa, insulation varnish, 210
Niwa, Y., coils on rectangular frames, 943
Nixon, C. F., brass dezincification, 955
Njegovan, V., entropy of real gases, Part 2, 1152
Noddack, W., & J. Eggert, silver compounds, 1635 ; silver halide emulsions, 1636
Nodon, A., X-rays of great wave-length, 1119
Nolan, J. J., dust in the atmosphere, 43
Nolan, J. J., R. K. Boylan, & G. P. de Sachy, atmospheric ionisation, 1713
Norbury, A. L., resistivity of copper, 2352
Nordheim, L., polarised light, 2491
Nordmann, C., & C. le Morvan, variable stars, 2036
du Noüy, P. L., constant N, 2614 ; constant N of Avogadro, 431 ; number N, 2769 ; surface tension, 2003
Noyes, A. A., & W. P. Baxter, ionised solutes, 2771
Nukiyama, H., alternating electric and magnetic field, 1939
Nukiyama, H., & K. Kobayashi, induction coil, 673
Nukiyama, H., & T. Kuwashima, triode valve resistance amplifier, 1208

Oddone, E., resistance of earth surface to wind, 1837
Odén, S., & R. A. Fisher, analysis of sediments, 987

Odén, S., B. A. Keen, E. M. Crowther & J. R. H. Coutts, the Odén-Keen recording balance, 736
Ogawa, W., T. Hanyu & T. Nishiuchi, insulation varnish, 210
Oldenberg, O., light-filter, 540
Oldenberg, O., & G. Cario, iodine band-spectrum, 1894
Olivier, C. P., parallaxes, 493
Ollat, L., coupled circuits, 2147
Olson, A. R., & T. F. Young, vacuum discharge tubes, 1176
Onnes, H. K., W. H. Keesom & L. Vegard, luminescence, 1892
Ono, A., fatigue of steel, 441; static elasticity, 265
Ono, S., orographic precipitation, 1015
Onslow, D. V., corrosion of iron and steel, 218
Ornstein, L. S., spectral lines, 2498
Ornstein, L. S., & H. C. Burger, dispersion, 2072; light-quantum theory, 1068; multiplet lines, 1360; Zeeman-effect, 363, 103
Ornstein, L. S., H. C. Burger & W. C. van Geel, Zeeman-effect, 2101
Ortner, G., & H. Pettersson, radium C, 1672
Oryng, T., bright pigments, 1332
Osborne, N. S., H. F. Stimson & T. S. Sligh, Jr., flow calorimeter, 2538
Osborne, N. S., H. F. Stimson, T. S. Sligh, Jr., & C. S. Cragoe, specific heat, 1688
Oseen, C. W., anisotropic liquids, 765, 2005; hydro-dynamics, 764
Osgood, T. H., & J. F. Lehmann, electrons, 2338
Otashiro, T., absorption dye solutions, 319
Otto, J., & L. Holborn, helium, nitrogen, and argon, 1146; isothermals, 2549
Oudt, F., & W. J. Beekman, blackening curves, 551
Oudt, F. W., Rb and Cs doublets, 2709
Oudt, F. W., & W. J. Beekman, reflecting power, 2664
Owens, A. E., W. A Patrick & W. C. Preston, adsorption, 1753
Owens, J. S., atmospheric conditions, 1581
Oxley, A. E., physical research in the cotton industry, 9

Page, L., aberration of light, 1348; advanced potentials and atomic models, 176; Balmer law, 1823; electron 793; magneton, 2349
Page, L., with note by J. A. Eldridge, Hall-effect, 203
Page, L., & J. Zeleny, cylindrical magnet carrying current, 633
Palm, A., electrostatic voltmeters, 2597
Paloque, E., latitude and time, 511
Paneth, mixed crystals, 470*
Paneth, F., activated hydrogen, 615
Panichi, V., specific gravity, 732
Paris, E. T., compound resonators, 172
Parker, H. C., & Elizabeth W. Parker, picnometer, 1280
Parker, M. A., & H. P. Armes, chemical reactions influenced by magnetic field, 1257
Parkinson, W. C., principal magnetic storms, Peru, 1924, 427
Parr, S. W., & J. E. Moore, heats of oxidation, 963
Parsons, J. A., & W. E. Pratt, corrosion, 1984
Parsons, L. B., chemical reactions and water, 2629
Partington, J. R., & M. F. Carroll, specific heats, 1687
Partington, J. R., & J. J. Doolan, tellurium vapour pressure, 1141
Partington, J. R., & A. J. Prince, explosion of ammonia with electrolytic gas and oxygen, 451
Partington, J. R., & (Mrs.) K. Stratton, latent heats of fusion, 892
Pasqualini, C., plane motion of fluids, 269
Patart, G., gas compression 1147
Paterson, T. R., & H. G. Rule, chemical and physical properties, 442
Patrick, W. A., & N. F. Eberman, adsorption, 1225
Patrick, W. A., & D. C. Jones, adsorption, 1224
Patrick, W. A., W. C. Preston & A. E. Owens, adsorption, 1753
Patterson, J., meteorology at the British Association, 1582
Pauli, W., Jr., closing in of electron-groups, 1875; Zeeman-effect, 1410
Pauling, L., & R. M. Bozorth, crystal structures, 2224
Pauling, L., & P. Debye, ionised solutes, 2772
Pauling, L., & R. C. Tolman, entropy, 2730
Pauthenier, rotating carbon arc, 2134
Pauthenier, M., electrostriction, 920
Pauthenier, M., & G. Bruhat, electrostriction, 1195
Payne, Cecilia H., O stars, 1030
Payne, H. J., electrolytic production of chlorine, 26B
Person, F., A. A. Michelson & H. G. Gale, velocity of light, 2025
Pease, F. G., star mizar, 2056
Peczalski, T., & A. Launert, cementation of copper, 440
Pedersen, P. O., sparks lag and shape, 923
Penkava, J., & J. Stoklasa, Vesuvius, 372
Pérard, A., index of refraction, 1053
Perlewitz, P., wind observations, 298
Perot, A., photographic recorder, 1206
Perrakis, N., Trouton's law, 1691
Perreau, G., & A. Boutaric, colloidal solution, 1761
Perrette, Bertha, lead isotopes, 2023
Perrier, A., anisotropic transparence, 321
Perrin, F., polarised fluorescence, 1359

Perrin, G. H., convection of heat, 902
Perrin, J., & d'Arsonval, 500,000-volt d.c. generator, 1981
Perry, J. H., helium, 901
Persico, E., & O. M. Corbino, plate current in triodes, 1961 ; electronic tube oscillator, 1960
Peschard, M., ferronickels, 2762 ; magnetism of ferronickels, 2159, 2160
Peters, G. H., asteroids, 57
Peters, W. J., & L. A. Bauer, terrestrial magnetic disturbances, 2602
Petersen, M., & J. B. Green, magnesium spectra, 859 ; spectrum of magnesium 2700
Petersson, J. H., Milky Way stars, 2648
Petin, N., & E. Spitalsky, catalysis of H_2O_2, 711
Petit, R., Guilbert, & M. Lemay, X-rays on organic ferments, 371
Petrikaln, A., chemiluminescence, 2076
Pettersson, D., α-particles from RaC, 1915
Pettersson, H., nuclear collisions, 2526
Pettersson, H., & E. Kara-Michailova, scintillations, 1615
Pettersson, H., & G. Kirsch, atomic disintegration, 586, 1679
Pettersson, H., & G. Ortner, radium C, 1672
Pfund, A H., halogen isotopes, 1383 ; nitrogen and hydrogen in the infra-red, 121
Phelps, E. R., & W. W. Sleator, absorption bands of water-vapour, 2701
Phillips, C. E. S., high-tension generators, 2369
Phillips, T. E. R., Mars, 1048
Philpot, A. J., medium insulators, 1483
Phragmén, G., & C. Benedicks, throttle cross, 2354
Phragmén, G., & A. Westgren, steel, 469 ; X-ray analysis of alloys, 2178
Picon, M., & P. Lebeau, diamond transformation, 893
Pienkowski, S., & A. Jablonski, fluorescence, 2662
Piéron, H., & N. Kleitman, vision, 1339
Pierret, E., & C. Gutton, stationary electromagnetic oscillations, 2584 ; valve oscillators, 2348
Pierucci, M., temperature of positive crater, 193
van der Pijl, C. W., stigmatism and orthoscopy, 2249
Pilley, J. E. G., isotopes, 1828
Pilley, J. G., & T. R. Merton, spectrum of nitrogen, 1371
Pilling, N. B., & R. E. Bedworth, corrosion, 1984
Pilon, H., X-rays, 2302
Pitts, C. R., & R. D. Kleeman, electrical layer, 1987
Plácinteanu, J. J., molecular forces, 475
Planck, M., Bohr atom, 790
Planiol, A., A. Magnan & E. Huguenard, aerodynamic force, 772 ; aeroplane manœuvres, 2220 ; hot-wire altitude instruments, 1536 ; wind speed, 802
Plank, R., specific heat of superheated vapours, 149
Plaskett, H. H., spectroscopic binaries, 500
Plaskett, J. S., Observatory, Victoria, B.C., 72 ; O-type stars, 504
Pleuger, G., solubility, 1501
Plotnikoff, W., electrical conductivity, 2189
Plotnikow, W. A., mass and protons, 36
Plyler, E. K., infra-red absorption of ice, 353
Pödder, A., magnetic declination in 1924, 428
Pohl, R., velocity of light, 1351
Pohl, R., & B. Gudden, crystals, 662 ; electronic conduction, 2590; photo-electric primary current, 1967
Pohlmeyer, W., β-ray spectrum of ThB + C, 377
Poindexter, F. E., low-pressure work, 390
Poindexter, F. E., & A. L. Hughes, mercury vapour trap, 2311
Pokrowski, G. I., absorption of light, 1612 ; depolarisation of light, 2071 ; diffuse reflection, 521
Pokrowski, G. I., & G. P. Woronkoff, depolarisation of light, 2679
Pokrowski, G. J., & G. P. Woronkoff, polarisation of light, 545
van der Pol, B., Jr., triodes, 1503B
Polányi, M., osmotic pressure, 1229
Polányi, M., & W. Ewald, plasticity of rock-salt under water, 8 ; tensile strength, 1798
Polányi, M., & G. Masing, tenacity of zinc, 261
Polányi, M., & E. Schmid, structure of metals, 961 ; tin crystals, 2016
Polányi, M., & E. Wigner, formation of molecules, 2430
Pollard, A. F. C., nephelometry, 2069
Polvani, G., galvano-magnetic experiment, 912 ; Hall-effect, 930
Pomeranzewa, A., & N. Isgarischew, gels, 1503
Pool, G. M., absorptions in the ultra-violet, 519
Poole, H. H., radium emanation tubes, 886
Poole, J. H. J., & J. Joly, radio-activity of basalts, 373
Popesco, J. G., mercury, 2413
Popoff, K., gravitation, 2026
Porter, A. W., mechanical refrigeration, 590 ; sols and gels of agar, 221*
Porter, Mary W., optical properties, 2466
Portevin, A., & L. Guillet, quenching, 1510
Pouget, I., & D. Chouchak, radio-active springs, 2534

Powell, J. H., reception of sounds in water, 1930
Poynton, F. Y., & G. E. Bell, dielectric constants, 1964
Prasad, M., N. G. Mitra, D. L. Shrivastava, & S. S. Bhatnagar, resistance films, 2752
Pratt, W. E., & J. A. Parsons, corrosion, 1984
Predwoditelew, A., fluorescence, 2490
Predwoditelew, A., & N. Netchaewa, dyes, 663
Predwoditelew, A., & N. Netschajewa, dyes, 1860
Preston, W. C., W. A. Patrick & A. E. Owens, adsorption, 1753
Price, T. S., emulsion fog, 1637*; emulsions, 1864
Price, T. S., & S. O. Rawling, photographic sensitivity, 2486
Prichard, C. R., & C. N. Hinshelwood, carbon dioxide and hydrogen, 2398; homogeneous and catalysed reactions, 2397
Prideaux, E. B. R., hydrogen-ion concentration, 1270
Prideaux, E. B. R., & W. E. Crooks, diffusion potentials, 225
Priest, I. G., colorimetric purity, 316
Prince, A. J., & J. R. Partington, explosion of ammonia with electrolytic gas and oxygen, 451
Prince, D. C., & F. B. Vogdes, push-pull valve oscillator, 214
Pring, J. N., sols and gels of agar, 221*
Pringsheim, P. & A. L. Reimann, fluorescence of benzol vapour, 97
Proudman, J., channel tides, 1583; tidal dynamics, 1547
Prunier, F., relativity, 1564, 2230
Prunier, F., & G. Fournier, relativity, 1565
Przibram, K., Becquerel rays, 1123
Pugno, G. M., strains in ships' hulls, 267
Pulfrich, C., photometric comparator, 1626
Puri, A. N., & E. M. Crowther, vapour-pressure of capillary systems, 163
Puri, V. S., & A. J. Allmand, superposed alternating currents, 2799; zinc-sulphuric acid-carbon primary cell, 1262
Puschin, N. A., & J. V. Grebenschtschikow, equilibria at high pressures, 391
Pychlau, H., & W. Hammer, α-rays of radium F, 585
Pye, D. R., pressure-time recorder, 1535
Pye, H. T., α-particles, 826

Quayle, P. P., single-spark photography, 1866
Quick, W. C., soap solutions, 2378
Quimby, S. L., viscosity, 1793
Quintin, Marguerite, & R. Audubert, adsorption of ions, 1758

Rabinov, I. I., diffraction of X-rays, 1908
Ralston, O. C., & G. S. Tilley, copper sulphate solutions, 1526
Raman, C. V., scattering of light, 2482
Raman, C. V., & L. A. Ramdas, scattering of light, 2268, 2677
Ramanathan, K. R., molecular optical anisotropy, 1856
Ramdas, L. A., & C. V. Raman, scattering of light, 2268, 2677
Ramler, J., photophoresis, 1641
Ramsauer, C., electrical charge on earth's surface, 635
Ramsbottom, J. E., C. G. Trotman & D. L. Chapman, hydrogen and oxygen in presence of silver and gold, 1254
Randall, D. P., ballistic galvanometers, 1203
Randall, M., & A. P. Vanselow, activity constants, 392
Rankine, A. O., frictional electricity, 178
Rao, K. R., spectra, 2096
Rao, K. R., D. Gunnayya, & A. L. Narayan, thallium vapour, 356
v. Raschevsky, N., thermionic effect, 2578, 2579; thermionic emission, 2343
Rasetti, F., resonance radiation, 335
Ratz, E., cylindrical pipe, 2330
Rauch, A. (experiments by), & E. Zintl, potentiometric titration, 2637
Rav, J. C. K., opalescence, 328; periodic variations of pressure over large land areas, 44
Rawdon, H. S., & A. I. Krynitsky, corrosion testing, 2778
Rawling, S. O., & T. S. Price, photographic sensitivity, 2486
Rawling, S. O., & F. C. Toy, selenium-cell density meter, 213
Ray, B., X-ray spectrum of sulphur, 2716
Ray, B. B., K_α doublet, 1101; X-ray spectra, 132
Ray, B. B., & M. Siegbahn, K_α doublets, 564
Ray, H. L., & J. N. Mukherjee, absorption, 1500
Ray, R. C., adsorption by silica gel, 1227; valency of boron, 1314
Ray, S., black (heat) radiation, 1925; diffraction experiments, 1340; earth's electric field, 2565; photoelectric action, 2345; Reeves experiment, 2555
Rayleigh (Lord), luminous mercury arc, 2295; phosphorus glow, 704
Rebora, G., radiological rectifier, 559B
Reboul, G., radiation, 1640; slow kathode rays, 2573
Redlich, O., electrolytic conductivity, 1531
Reese, C. L., explosives, 965
Reeve, L., micro-gas analysis, 395; quartz mercury lamp, 1179

del Regno, W., nickel steels, 959; selenium, 664
Reichenbach, H., planetary time, 2439
Reichenbächer, E., hydrogen atom, 2021; world-geometry characteristics, 1820
Reichinstein, D., Richardson-effect, 1721
Reimann, A. L., & P. Pringsheim, fluorescence of benzol vapour, 97
Reinhold, H., & C. Tubandt, solid electrolytes, 1775
Reinicke, F., & H. Zocher, lustre, 2461
Reissner, H., electron, 1827
Relf, E. F., & W. L. Cowley, vibrations of bars, 15
Remy, H., conductivity of dilute solutions, 1502
Reps, Schmidt-, H., infra-red emissive power, 2670
Reynaud-Bonin, E., non-sulphating accumulator, 714
Reynolds, F. W., sputtered platinum films, 658
Reynolds, J. H., nebula in Cassiopeia, 64; spiral nebulæ, 1587
van Rhijn, P. J., & F. H. Seares, stars, 2055
Riabouchinsky, D., plane motion of liquids, 270
Ricaud, M., & L. Escande, velocities in liquids, 1293
Rice, C. W., windage losses, 2010
Rice, F. O., C. F. Fryling & W. A. Wesolowski, temperature coefficient of a chemical reaction, 449
Rice, J., Eddington's natural field unit, 1569
Richards, E. M., & T. M. Lowry, organic compound rotatory power, 1073; rotatory dispersive power, 86
Richards, T. W., & F. T. Gucker, Jr., specific heats, 2312
Richardson, E. G., Æolian tones, 1928
Richardson, E. G., & E. Tyler, liquid jets, 2421
Richardson, H. L., & P. W. Robertson, adsorption, 1757
Richardson, L. F., brown corona, 1341; clouds and clear skies, 1580; turbulence, 1018
Richardson, O. W., & T. Tanaka, electron discharges, 922; secondary spectrum of hydrogen, 1887; spectrum of hydrogen, 848
Richardson, O. W., & A. F. A. Young, thermionic work-functions, 1720
Richardson, S. W., dielectrics, 1163
Richmond, Myrtle L., F. H Seares & Mary C. Joyner, Harvard-Groningen Durchmusterung, 2051
Richter, H., & H. Geffcken, "glow" relay, 939
Richter, H., & B. Neumann, potential of alkali metals, 2198, 2199
Richter, J., metallic reflection, 2462
Richter, R., optical systems, 1062
Richter, V., blackening law, 552
Rideal, E. K., colloid chemistry, 691
Rideal, E. K., & R. K. Schofield, surface films, 2412
Rideal, E. K., & E. G. Williams, ferrous ferric iodine iodide equilibrium, 1078
Riding, R. W., & E. C. C. Baly, helium and neon, 2749
Riede, A., galvanic conductivity, 416
Riegger, H., & F. Trendelenburg, short waves, 648
Riesenfeld, E. H., ozone, 2625
Riéty, L., e.m.f. filtration, 2632
Rimmer, W. B., Fo to Mb stars, 1033
Rinde, H., & T. Svedberg, ultra-centrifuge, 1237
Rinkel, R., self-inductance, 1489
Rinne, mixed crystals, 470*
Risler, J., & P. Mondain, radio-dermites, 1749
Riss, W., bröggerite, thorium, & radium, 1129
Ritchey, G. W., telescopic mirrors, 2474
Rivier, W., Huyghens' optics, 797
Roberts, J. K., thermal expansion of bismuth, 148
Roberts, R. W., rotary dispersion, 1342
Roberts, W. van B., Hall-effect, 655
Robertson, J., motion of projectile, 2012
Robertson, J. K., Fabry and Perot etalon, 343
Robertson, J. K., & J. T. Thwaites, photographic blackening, 833
Robertson, P. W., & H. L. Richardson, adsorption, 1757
Robinson, F. W., and W. T. Anderson, Jr., ultra-violet radiometer, 1634
Robertson, R., Oppau explosion, 231
Robinson, H. R., X-ray terms, 2518
Robinson, P. L., & H. V. A. Briscoe, atomic weight of bromine, 1316
Robinson, P. L., H. V. A. Briscoe, & G. E. Stephenson, tungsten wires, 1175
Rocard, Y., diffusion of light, 543, 2468, 2469; diffusion of light in fluids, 1069
Rodebush, W. H., strong electrolytes, 721
Rodebush, W. H., J. W. Andrews & J. B. Taylor, temperature-entropy diagrams, 1437
Rodebush, W. H., & J. C. Michalek, atomic heat capacities, 2721
Rodgers, R. C., X-ray rooms, 2370
Roebuck, J. R., mechanical thermostats, 2309
Rössiger, M., & S. Valentiner, fluorescence, 1868
Rogers, L., meteorology of India, 2238*
Rogowski, W., & E. Flegler, potential waves, 2143
Rohmann, C., & R. Fricke, liquid potentials, 712
Rohmann, H., binding potential, 1451
Rollefson, G. K., lithium X-rays, 2107

Rollefson, G. K., J. H. Mathews & B. H. Carroll, ebullioscopic measurements, 2315; partial pressures of liquid mixtures, 2314
Rollet, A. P., electrolytic frequency meter, 1202; nickel electrodes with a.c., 2633
Roman, I., spherical waves, 1336
Ronchi, V., high resolving power, 1624; optical systems, 1063; screen in optical systems, 80
la Rosa, variable stars, 1607
la Rosa, M., ballistic principle, 276; light-velocity, 2460; variable stars, 2241
Rosbaud, P., & E. Schmid, monocrystals, 1817
Rose, D. C., & P. Lowe, argon spectrum, 864
Rosenberg, H., electro-microphotometer, 2257
Rosenblum, S., thorium, 1914
Rosenhain, W., & Jean McMinn, plastic deformation, 2212
Ross, F. E., photographic desensitisers, 2680
Ross, P. A., scattered X-rays, 2712; X-rays scattering, 2710
Ross, P. A., & D. L. Webster, Compton-effect, 1401, 1402; hard X-rays, 1906
Rossby, C. G., thermal equilibrium, 618
Rosseland, S., hydrogen in a star, 2037; pressure relations in a gaseous star, 54; stellar absorption coefficient, 2650
Rostosky, L., aluminium solders, 228
Roszak, C., & M. Vérnon, thermal radiation, 620
Roth, W. A., H. Ginsberg & R. Lassé, micro-calorimeter, 153
Roth, W. A., & R. Lassé, micro-calorimeter, 895
Rothé, Lacoste, Bois, (Miss) Dammann, & (Miss) Hée, Oppau and La Courtine explosions, 906
Rotter, G., Oppau explosion, 231
Rouse, G. F., & G. W. Giddings, ionisation, 2745
Rousseau, G. A., colour photography, 2681
le Roux, viscosity of water, 1540
Row, C. K. V., relativity, 1566
Rowe, F. W., high-tin bronze, 957
Rowe, H. N., C. A. Kidner, Jessie Ewald & S. Dushman, tungsten electron emission, 1717
Rowell, H. S., spherometer, 735
Roy, M., theorem of Lagrange, 994
Roy, S. C., electrons from hot bodies, 2341; emission of ions from hot metals, 409
Royds, T., arc spectra, 1653
Royer, cholesterol rotatory power, 1074
Ruark, A. E., Carnot's theorem, 1696; multiple electron transitions, 2691
Ruark, A. E., & G. Breit, space quantisation, 1495
Ruark, A. E., & R. L. Chenault, cadmium spectra, 2296
Ruark, A. E., & P. D. Foote, wave-length shifts, 1631
de Rubies, S. P., lanthanum arc spectrum, 2091
Rukop, H., transmitting valves, 649
Rule, H. G., & T. R. Paterson, chemical and physical properties, 442
Rump, W., resonance fluorescence, 348, 1869
Rump, W., & E. Warburg, ozone, 2186
Rumpf, E., Benedick's effect in vacuum, 152
Runge, C., Paschen-Back effect, 1084
Runge, I., electrical conductivity, 1475
Runge, I., & E. Lax, output of light, 2499
Rupp, E., luminescence of phosphorus, 95; phosphorescence, 96
Russell, A., electrostatic capacity, 2562
Russell, A. S., & W. P. Widdowson, mesothorium 2, 1423
Russell, H. N., multiplets, 1882, 2281, 2282; spectral lines, 2080; stellar evolution, 2244
Russell, H. N., & F. A. Saunders, ionised calcium spectrum, 2510; spectra, 1382
Russell, R. P., & W. G. Whitman, corrosion, 1984
Russell, R. P., W. G. Whitman & G. H. B. Davis, solubility of ferrous hydroxide, 1232
Rutherford, E., atomic nuclei, 1678; disintegration, 880; radio-activity, 139; stability of atoms, 1677
Ryschkewitsch, E., fusion of graphite, 1432

Sacco, F., lunar phenomena, 313
de Sachy, G. P., J. J. Nolan & R. K. Boylan, atmospheric ionisation, 1713
Sacia, C. F., curve analyser, 535
Sacklowski, A., X-ray analysis, 2622
Saegusa, H., dielectric hysteresis, 1204; residual charge, 916
Saget, J., 500,000-volt rectified current, 1417
Saha, M. N., & N. K. Sur, thermal ionisation, 1461
Sahánek, J., very short waves, 2145
Saidman, J., photoelectric effect in Mn, 1751; skin absorption of ultra-violet rays, 1090
St. John, C. E., & W. S. Adams, convection currents in stars, 498
Saklatwalla, B. D., iron red-shortness, 2783*
Sale, P. D., & A. F. Hedrick, heat insulation, 896
Saleeby, C. W., natural and artificial sunlight, 2368
v. Salis, G., zinc and cadmium spark spectra, 1108

Salles, E., G Gibault & C. Maurain, atmospheric conductivity, 2332
Saltmarsh, M. O., spectra of phosphorus, 2297
Sampson, R. A., effective temperatures of stars, 1604
Samson, C., positive column, 2737
Samuel, R., ionisation of potassium vapour, 643
Sandeman, I., spectrum of hydrogen, 2705
Sanford, R. L., magnetic properties of steel wire, 1215
Sano, S., time-rate of chemical change, 1516; time-rates of vaporisation and chemical changes, 1515
Sanyal, R. P., & N. R. Dhar, photosynthesis, 2685
Sarek, R., rectification of alternating current, 1490
Sasahara, T., X-ray analysis of solid solutions, 2173
Sasaki, N., solution equilibrium, 2185
Saslawsky, J. J., coefficients of expansion of liquids, 383
Satterly, J., capillary tube, 745
Sauerwald, F., fusion of graphite, 1432*
Sauerwald, F., & G. Elsner, metallic oxides, 1506
Sauerwald, F., & E. Jänichen, synthetic metallic bodies, 1507
Saunders, F. A., & H. N. Russell, ionised calcium spectrum, 2510; spectra, 1382
Saunders, S. W., gaseous equilibrium constants, 612
Saville, W. B., & A. Müller, long-chain compounds, 1557
Saville, W. B., & G. Shearer, saturated aliphatic ketones, 1556
Savur, S. R., stress optical coefficients of glass, 2262
Sayce, L. A., & H. V. A. Briscoe, dielectric constants of liquids, 1477
Sborgi, U., passivity of metals, 1990, 1991
Scatchard, G., strong electrolytes, 1770, 2638
Schachenmeier, R., linear conductors 1159
Schaefer, C., heterochromatic photometry, 1076
Schalén, C., Milky Way stars, 2647
Schall, C., & H. Markgraf, electrolytic oxidation of cobalt, 976
Schaposchnikow, K., light quanta, 2493; Maneff formula, 2497; Newtonian mechanics, 776
Schaum, K., photographic blackening, 553
Schaum, K., & A. Feller, activisation of chlorine, 403
Schaum, K., & P. Friederich, electrophoresis, 727
Schaum, K., & W. Schleussner, photochemical potential changes, 2484
Scheel, K., & F. Blankenstein, specific gravity of mercury, 1785
Scheibe, A., & E. Giebe, piezoelectric crystal rods, 2593; piezoelectric properties of crystals, 2594
Schelleng, J. C., & H. W. Nichols, radio waves over the earth, 1723
Schelte, F., adsorption, 1223
Schering, H., & R. Schmidt, electrostatic attraction, 1445
Schermerhorn, W., Zeiss theodolite, 1061
Schidlof, A., entropy, 156; radiation quanta, 1083
Schiebold, E., X-ray photograms, 133; X-ray spectrum, 875
Schierkolk, K., absorption spectrum of ammonia, 354
Schiller, H., liquid chains, 717
Schiller, L., turbulence, 762, 2423
Schiller, L., & H. Liebster, spheres in viscous fluid, 1303
Schilovsky, P. P., distance precision training, 534
Schirmann, M. A., extreme vacuum pump, 739
Schlenck, W., slightly ionised gases, 1463
Schleussner, W., & K. Schaum, photochemical potential changes, 2484
Schlink, F. J., displacemeter, 2204; engineering instruments, 251
Schlivitch, S., & A. Grumbach, surface tension, 2411
Schlomka, T., & A. Wigand, electric potential, 180
Schmick, H., free cooling, 2719
Schmid, E., & O. Hasse, metallic crystals, 2222
Schmid, E., & M. Polányi, structure of metals, 961; tin crystals, 2016
Schmid, E., & P. Rosbaud, monocrystals, 1817
Schmidt, A., schematic magnets, 682
Schmidt, E., atmospheric oxygen absorption spectrum, 1890
Schmidt, G. C., atomic rays, 98; ions in solid electrolytes, 240
Schmidt, H., logarithmic isochromates, 169
Schmidt, R., & H. Schering, electrostatic attraction, 1445
Schmidt-Reps, H., infra-red emissive power, 2670
Schmieder, F., phosphorescence, 2487
Schneidewind, R., & E. M. Baker, metal cleansing, 1252
Schnell & Barré, sound waves in the earth, 2327
Schönborn, H., K. Schröter & K. Agte, tungsten powder, 2435
Schoep, A., sklodowskite, 138
Schofield, F. H., thermal and electrical conductivities, 1425
Schofield, R. K., & E. K. Rideal, surface films, 2412
Schonland, B. F. J., kathode rays, 1957
Schott, G. A., Bucherer's experiment, 2231
Schottky, W., positive column, 780

Schottky, W., & J. v. Issendorff, electric diffusion in gas, 1464
Schreinemakers, F. A. H., equilib.ia, 1539
Schreiner, E., quinhydrone electrode, 2794
Schrödinger, E., atomic trunks, 2284; bright pigments, 1332; heat of rotation of hydrogen, 1370; relativity, 2424
Schröer, E., benzene ring, 1321
Schroeter, F., gas discharge, 2738; measurement of magnetic fields, 671
Schröter, K., K. Agte & H. Schönborn, tungsten powder, 2435
Schrum, G. M., & J. C. McLennan, auroral spectrum, 2287
Schükarew, A., magnetochemical effects, 731
Schüler, H., first lithium spark spectrum, 1107
Schütz, W., & W. Gerlach, excited atoms, 1000
Schütz, W., calcspar lenses, 2067
Schultz, P. A., radiation therapy, 685
Schulz, E. H., C. W. Drescher, stellite and similar alloys, 438
Schulz, H., calcspar lenses, 2258; complementary colours, 1611; matt surfaces, 1613; optical rotation, 2467; polarisation prisms, 538
Schulze, Günther-, A., arc lights with non-glowing kathode, 191; glow discharge, 184, 640
Schumann, T. E. W., electrification of raindrops, 2560
Schumann, W. O., electric rupture, 2583
Schuster, A., total reflection, 1051
Schwab, G. M., & S Loeb, nitric oxide, 638
Schwarz, C., heated walls, 2720
Schwarz, J., magnetic induction, 2610
v. Schwarz, M., fused blast-free quartz, 77
Schweidler, E., slightly ionised gases, 1462
Schweikert, G., & L. Grunmach, surface tension, 259
Scott, A. F., crystal lattice, 1551
Ščukareff, S., P. Lukirsky & O. Trapesnikoff, electrolysis of crystals, 1780
Seares, F. H., magnitude scales, 2052; mean colour-index of stars, 1609; parallaxes, 494
Seares, F. H., Mary C. Joyner & Myrtle L. Richmond, Harvard-Groningen Durchmusterung, 2051
Seares, F. H., & P. J van Rhijn, stars, 2055
Searle, G. F. C., a.c. frequency by vibrations of rods, 1736; Young's modulus, 2
Sears, F. W., & F. G. Keyes, Joule-effect for CO_2, 1435
Sederholm, P., & C. Benedicks, invar, 2589
Sedström, E., alloys of gold and copper, 701
v. Seelen, D., electrical conductivity, 200
Seeliger, R., cooling of hot bodies, 1692
Seeliger, R., & W Lindow, glow discharge, 2293
Seeliger, R., & E. Mauz, glow discharge, 1172
Seifriz, W., emulsions, 2381
Seitz, W., electron discharge and X-rays, 580
Sekiguti, R., S. Itiki & T. Taguti, sunspots, 2660
Selényi, P., thermionic currents, 195
de Sélincourt, M., anomalous reflection of silver, 1337
Seljakow, N., & A. Krasnikow, New K_β doublet, 2522
Seljakow, N., A. Krasnikow & L. Strutinski, glass, 2433
Sellerio, A., axio-galvano- and thermo-magnetic effects, 2356; refraction, 814
Semenoff, N., magnetic moments of atoms, 473
Semenoff, N., L. Inge & A. Walther, solid insulators, 2150
Sen, A., P. R. Chaudhuri & J. Ghosh, electrode potential of mercury, 1480
Sen, B. M., deformability of surfaces, 4
Sen, K. C., colloidal solutions, 693, 1986
Senftleben, H., active hydrogen, 2542; gaseous mixtures, 2323
Senftleben, H. A., electromagnetic laws, 1699
Sesini, O., elastic lattice structures, 263
Sève, P., optical constants, 2256
Sever, W., & D. H. Bangham, gas sorption, 1983
Severi, F., relativity, 39
Sexl, T., electric charges, 2557; spheres in gases, 1810
Seyer, W. F., & S. R. McDougall, lubrication, 743
Shack, A., heat radiation, 4B
Shajn, G., double stars, 1603
Shapley, H., giant stars, 507; magellanic cloud, 1026
Shapley, H., & H. H. Wilson, magellanic cloud, 2045
Sharma, R. K., & N. K. Sur, absorption spectra of vapours of lead and tin, 126
Shaver, W. W., alkali metal spectra, 866
Shaver, W. W., & J. C. McLennan, silicon spectra, 865
Shaw, N., pressure and temperature, 1576*; if the earth went dry, 302, 1842; Polar front meteorology, 2450*
Shaw, N., & H. Fahmy, saturated air, 2446
Shaw, P. E., & H. W. Gilbert, electrical charges, 2133
Shaxby, J. H., diffusion, 990; Laue diagrams and mother-of-pearl, 1118; mother-of-pearl, 1909; sols and gels of agar, 221*
Shearer, G., X-ray spectra, 2517

Shearer, G., & W. B. Saville, saturated aliphatic ketones, 1556
Shenstone, A. G., arc spectra, 1893
Sheppard, S. E., photographic gelatin, 2270
Sheppard, S. E., & F. A. Elliott, swelling of gelatine, 246
Sheppard, S. E., A. P. H. Trivelli & R. P. Loveland, photographic sensitivity, 2269
Sheppard, S. E., E. P. Wightman & A. P. H. Trivelli, emulsion fog, 1637; photographic sensitivity, 549, 550
Sherman, M. S., & E. W. Guernsey, fixation of nitrogen, 2626
Shikata, M., electrolysis, 2805
Shimizu, T., Einstein's law of gravitation, 2235
Shipley, J. W., I. R. McHáffie & N. D. Clare, corrosion, 1984
Shôgenji, K., lateral vibrations of rods, 778
Shoulejkin, W., colour of the sea, 816
Shrivastava, D. L., & S. S. Bhatnagar, optical inactivity, 344
Shrivastava, D. L., S. S. Bhatnagar, M. Prasad, & N. G. Mitra, resistance films, 2752
Shrum, G. M., & J. C. McLennan, hydrogen secondary spectrum, 871
Siebe, P., iron on copper at high temperatures, 1244
Sieg, L. P., deep slits, 84
Siegbahn, M., & A. Larsson, multiply ionised molybdenum, 577
Siegbahn, M., & B. B. Ray, K_α doublets, 564
Siegbahn, M., & R. Thoraeus, X-ray spectra, 131
Siegbahn, M., R. Thoraeus, E. Bäcklin, L. de Broglie & A. Dauvillier, X-ray spectrum, 1905
Sieglerschmidt, H., coefficient of expansion, 2537
Silberstein, L., curvature radius, 1570
Simeon, E., & J. S. G. Thomas, recording camera, 1620
Simon, A. W, electrostatic alternator, 1447; electrostatic systems, 2561; four-carrier Voss machine, 1167; influence electrostatic generator, 919
Simon, A. W., & A. H. Compton, β-rays, 1669
Simon, F., Eucken's work on entropy, 1438
Simons, J., hydrogen fluoride, 387; preparation of fluorine, 463
Simons, J., & J. H. Hildebrand, hydrogen fluoride, 388
Simons, L., X-ray emission, 1122
Singh, B. K., Walden inversion, 40
Sinozaki, H., & R. Hara, hydrocyanic acid, 2788; hydrocyanic acid saturated vapour-pressure, 1140
Sirk, H., molecular diameter, 474; molecular diameters, 1819
Skinner, C A., universal polarimeter, 1852
Skinner, H. W. B., L levels, 100
Skinner, H. W. B., & P. Kapitza, Zeeman-effect, 2502
Skobelzyn, D., γ-rays, 143
Slater, J. C., optical phenomena, 1834; transition probabilities, 2081
Slater, J. C., & G. R. Harrison, sodium spectra, 2699
Sleator, W. W., & E. R. Phelps, absorption bands of water-vapour, 2701
Sligh, T. S., Jr., N. S. Osborne & H. F. Stimson, flow calorimeter, 2538
Sligh, T. S., Jr., N. S. Osborne, H. F. Stimson & C. S. Cragoe, specific heat, 1688
Slussareff, G., tracing rays, 342
Smart, W. M., cosmogonic time-scale, 1606; M35, 1593; stellar plates, 2651
Smedley, S. P., & J. F. King, vaporisation, 385
Smekal, A., Bose-Einstein statistics, 2547; quantum theory, 140; scattering and dispersion, 1855
Smith, A. W., latent heat, 2119
Smith, D. F., & G. N. Lewis, reaction rate, 2180
Smith, E. R., & D. A. MacInnes, transference numbers, 1774
Smith, H. G., band-spectra of sodium-potassium vapours, 361
Smith, J. E., rate of explosion, 2131
Smith, J. H., X-rays, 1120
Smith, K. K., & L. I. Bockstahler, specific heats of metals, 596
Smith, L. I., ozone, 2401; ozoniser, 2400
Smith, R. C., catalysts, 2790
Smith, S., electrically-exploded wires, 2087
Smith, S. L., & J. V. Howard, tensile testing, 996
Smith, S. W. J., A. A. Dee & W. V. Mayneord, magnetism of annealed carbon steels, 1216
Smith, T., aberrations, 330; first order aberrational equations, 546; lenses, 1065; neutralisation, 1066
Smith, T. T., achromatic doublet, 1067
Smith, Winifred J., after-images, 1617
Smyth, C. P., electric moments, 287; electric moments of molecules, 2431; ions and molecules, 2429
Smyth, H. D., ionisation in hydrogen, 1950; ionisation problems, 926
Smits, A., aluminium, 229
Soller, W., X-ray spectrometer, 76
Somigliana, C., static elasticity, 262
Sommer, L. A., & K. Bechert, arc spectrum of Ni, 2702; vanadium spectrum, 1389
Sommerfeld, A., periodic system, 1393; spectral lines, 1361; X-ray lines, 1394
Sommerfeld, A., & H. Hönl, multiplet lines, 1658
Soper, F. G., hypochlorous acid, 444

Sorensen, A. J., thin films of ferromagnetic metals, 1214
Spanner, H. J., thermic emission, 647
Sparks, C. Matilda, & H. L. Curtis, mutual inductance of two coaxial circles, 942
de Sparre, wave propagation, 2218
Speller, F. N., corrosion, 1984, 2776
Speller, F. N., & F. G. Harmon, corrosion, 2774
Spence, B. J., spectrum of ammonia gas, 1384
Sperr, F. W., Jr., absorption of hydrogen sulphide, 945
Spijkerboer, J., external photospheric layers, 70
Spitalsky, E., electrochemical polarisation, 720
Spitalsky, E., & N. Petin, catalysis of H_2O_2, 711
Sponer, H., lead and tin spectra, 1650
Spooner, T., permeability and hysteresis loss, 1746
Stäblein, F., & J. Würschmidt, current distribution in a wheel, 344B
Stäger, A., contact electrification, 2564; contact electrification by dust, 1170
Staesche, M., & G. Grube, chemical equilibrium, 2399
Stamm, A. J., & E. O. Kraemer, emulsions, 1238
Stamm, A. J., & T. Svedberg, emulsions, 2170
Stammreich, H., gold in mercury, 1508
Stannard, W. H., & P. E. Klopsteg, photographic recorder, 340
Stanton, T. E., & Dorothy Marshall, skin friction, 255
Stapelfeldt, F., H. Zocher & H. Freundlich, flow anisotropy, 813
Starkweather, H. W., & G. P. Baxter, density of oxygen, 734
Stauffer, H., refraction of electric field, 349B
Steacie, E. W. R., & F. M. G. Johnson, viscosities, 1541
Stead, G., & B. Trevelyan, low-voltage glows, 194
van Steenwijk, J. E. de V., proper motions of stars, 1594
Steinberg, J. C., & H. Fletcher, loudness, 175
Steinebach, T., elasticity, 2416
Steinert, H. E., M. C. Crew & B. S. Hopkins, solubility of yttrium salts, 1234
v. Steinwehr, H., & W. Jaeger, heat of combustion, 967
Stenger, E., & G. v. Kujawa, photographic blackening, 834
Stephenson, G. E., P. L. Robinson & H. V. A. Briscoe, tungsten wires, 1175
Stephenson, R. J., & J. A. Crowther, electrolytic interrupter, 2360; induction coil, 1974
Stephenson, W., & J. Taylor, extinction voltages, 1945
Stephenson, W., J. Taylor & W. Clarkson, capacities and high resistances, 1732
Stern, O., electrolytic double layer, 723; matter and radiation, 2724
Stetchkine, B., incompressible liquid, 2007
Stetter, G., atmospheric disturbances, 1473; conductivity of marble, 415
Steubing, W., continuous spectra, 1897; electromagnetic sensitivity of iodine atom, 2290
Stewart, A. W., J. K. Marsh & W. H. McVicker, tesla-luminescence spectra, 115, 116, 2090
Stewart, G. W., acoustic filters, 630; acoustic wave filters, 911
Stewart, J. Q., Fraunhofer lines, 2456
Stifler, W. W., W. Duane & Alice H. Armstrong, secondary X-ray spectra, 575
Stimson, H. F., T. S. Sligh, Jr., C. S. Cragoe & N. S. Osborne, specific heat, 1688
Stimson, H. F., T. S. Sligh, Jr., & N. S. Osborne, flow calorimeter, 2538
Stockbarger, D. C., incandescent lamp with quartz window, 1618
Stöckl, M., undulating current magnetisation, 675
Stoklasa, J., & J. Penkava, Vesuvius, 372
Stokvis, L. G., constant and parts of triphase system, 1209
Stoll, E., E. Gerecke & W. Dällenbach, negatively-charged probes, 1180
Stolt, H., kathode spot of arc light, 1459
Stoneley, R., elastic waves, 273
Stoner, E. C., electrons among atomic levels, 38; radiation, 1871; spectroscopic magneton numbers, 1979
Stoner, E. C., & L. H. Martin, absorption of X-rays, 1666
Stott, V. H., Edith Irvine & D. Turner, viscosity, 1792
Straneo, P., axially symmetrical Einsteinian fields, 1330; thermic radiation, 1142
Stranski, I., contact detectors, 412
Stratton, F. J. M., O-type stars, 53
Stratton, (Mrs.) K., & J. R. Partington, latent heats of fusion, 892
Strecker, F., & K. Matthies, reciprocal relations in a.c. circuits, 674
Strömberg, G., cosmical velocities, 2054; globular clusters, 2657; stellar motions, 2653
Strum, L., equilibrium of radiation, 1926
Strutinski, L., A. Krasnikow & N. Seljakow, glass, 2433
Struve, O., 430² Orionis, 502; spectroscopic binaries, 501
Struve, O., & G. van Biesbroeck, asteroids, 508
Struve, O., & E. B. Frost, 66 Eridani, 1029; 61 μ Orionis, 503
Stscherbakoff, I., anode processes, 2643

Stuart, H. A., resonance fluorescence, 2077
Stubbs, S. R., O. C. de C. Ellis & C. Campbell, speed of flame, 232
Stücklen, H., absorption spectrum of cadmium atom, 359; spark potential, 189
Stumpf, F., isotopes of mercury, 477
Stutz, G. F. A., pigments, 2273
Subrahmaniam, G., & D. Gunnayya, spectral lines in prism spectroscope, 81; string vibration, 1158; underblown pipes, 1157
Subrahmaniam, G., & A. L. Narayan, electrically luminescent potassium vapour, 357
Sucksmith, W., gyro-magnetic ratio, 2364
Suda, K., Japanese earthquakes of Sept. 1, 1923, 46
Sudholt, E., & A. Kratzer, resonance spectrum of iodine vapour, 2291
Sugden, S., surface tension, 1292
Sugiura, Y., doublets and triplets, 2280
Sugiura, Y., & H. Nagaoka, isotopy, 34; metal arcs, 850
Sugiura, Y., H. Nagaoka & T. Mishima, isotopes, 33
Suhrmann, R., photoelectrons, 2337
Suhrmann, R., & P. Huppert, ultra-violet absorption, 2463
Suhrmann, R., & K. v. Lüde, specific heat of bromine, 382
Sunatani, C., Bourdon tube pressure gauge, 737
Sur, N. K., & R. N. Ghosh, potassium vapour-absorption spectrum, 1097
Sur, N. K., & M. N. Saha, thermal ionisation, 1461
Sur, N. K., & R. K. Sharma, absorption spectra of vapours of lead and tin, 126
Suryanarayana, K., light on potassium iodide, 91
Sutton, H., zinc-plated steel, 2806
Svedberg, T., & H. Rinde, ultra-centrifuge, 1237
Svedberg, T., & A. J. Stamm, emulsions, 2170
Svensson, E., & E. Bengtsson, silver bands λ3330 and λ3358, 1110
Swann, W. F. G., physics, 2018; relativity, 2229, 2641
Swinne, R., periodic system, 2426
Syrkin, J. K., thermal radiation, 1695
Szabó, v. Náray-, S., & E. Brummer, anodic purification of mercury, 1528
Szegvari, A., linear elements, 79
Szilard, B., electrometer, 1487; interior of pearls, 1334
Szilard, L., oscillation phenomena, 2325
Szilard, L., & H. Mark, X-radiation, 2521

Taguti, T., R. Sekiguti & S. Itiki, sunspots, 2660
Takahashi, Y., band-spectra, 107
Takamine, T., R. L. Chenault & P. D. Foote, forbidden spectral lines, 2696
Takamine, T., & M. Fukuda, mercury line 2270 Å. ($1S - 2p_1$), 1112; spectra of constricted arc of metals, 125
Takeuchi, T., rotation, 274
Talon, A., fluid friction and tractive losses, 1304
Tamm, I., paramagnetism, 2161
Tanabe, T., aluminium-zinc system, 700
Tanaka, T., spectrum of hydrogen, 2704
Tanaka, T., & O. W. Richardson, electron discharges, 922; secondary spectrum of hydrogen, 1887; spectrum of hydrogen, 848
Tardy, H. L., aplanatic triple objectives, 2254
Tartakowsky, P., mechanical correspondence principle, 285
Tasker, H. G., & L. T. Jones, kathode-ray oscillograph, 669
Taubes, Sophie, photoelectric effect, 1728
Taylor, E. W., anallatic telescope, 331
Taylor, G. I., & C. F. Elam, aluminium crystals, 2415
Taylor, G. I., & W. S. Farren, plastic extension of metals, 1764
Taylor, G. I., & C. T. R. Wilson, soap-bubbles in electric field, 2331
Taylor, H. D., continuously moving film, 329
Taylor, H. S., catalytic surface, 1768, contact catalysis, 454
Taylor, H. S., & J. S. Beckley, adsorption, 2766
Taylor, J., l.t. discharge tubes, 404, 1456
Taylor, J., & W. Clarkson, "flashing" of discharge-tubes, 1454, 1455
Taylor, J., W. Clarkson & W. Stephenson, capacities and high resistances, 1732
Taylor, J., & W. Stephenson, extinction voltages, 1945
Taylor, J. B., J. W. Andrews & W. H. Rodebush, temperature-entropy diagrams, 1437
Taylor, P. B., & G. W. Moffitt, binocular telescope, 2473
Taylor, W., chlorine, 2182
Tear, J. D., Nichols' radiometer, 2479
Tear, J. D., & E. F. Nichols, electric-wave spectra, 1373
Teegan, J. A. C., & J. J. Dowling, optical interference, 2266
Teichmann, L., & G. Bredig, critical constants, 2725
Temple, G., mass and energy, 2442
Tendeloo, H. J. C., & H. R. Kruyt, emulsoid sols, 433
Terazawa, K., K. Yamazaki & Y. Akishino, aeronautical kinematograph, 548
Terenin, A., optical stimulation of atoms, 1362
Terrill, H. M., absorption of kathode rays, 1184
Terry, E. M., magnetic properties, 2608

Tesh, K. S., & A. Lowy, salicylic aldehyde, 981
Teves, M. C., & V. Henri, molecular predissociation, 565
Thatcher, C. J., applied organic electrochemistry, 1534
Thibaud, J., characteristic γ-ray spectra, 1127; γ-rays, 379; γ-rays in radioactive disintegration, 1918; γ-spectra, 1917; mesothorium γ-radiation, 882; thorium γ-radiation, 881
Thibaud, J., & M. de Broglie, atomic absorption of radiation, 1125
Thièle, J., thermo-currents in electrolytes, 1777
Thilenius, R., & C. Dorno, Davos frigorimeter, 1430
Thirring, H., elasticity, 2417; special relativity theory, 485; velocity of light, 1350
Thomas, C. H., soft X-rays, 1659
Thomas, H. H., Oppau explosion, 231
Thomas, J. S. G., flow of gases, 604
Thomas, J. S. G., & E. Simeon, recording camera, 1620
Thomas, T. Y., principle of equivalence, 795
Thompson, F. C., & W. H. Dearden, solid diffusion, 226
Thompson, F. C., & W. E. W. Millington, plastic deformation of metals, 753
Thomson, A., atmospheric potential-gradient, 402
Thomson, G. P., Bohr's stationary states, 2428; high-voltage discharge, 925
Thomson, J. J., electric discharge, 1707; structure of light, 177, 1938
Thoræus, R., & M. Siegbahn, X-ray spectra, 131
Thoræus, R., M. Siegbahn, A. Dauvillier, L. de Broglie & E. Bäcklin, X-ray spectrum, 1905
Thornton, W. M., thermal conductivity of insulators, 1132
Thornton, W. M., & J. A. Harle, electrolytic corrosion, 2779
Thorpe, J. F., colours, stains and dyes, 1523
Threlfall, R., R. Robertson, H. H. Thomas, A. F. Hallimond, W. Bragg & G. Rotter, Oppau explosion, 231
Thwaites, J. T., & J. K. Robertson, photographic blackening, 833
Tian, A., & (Miss) Bérenger, heats of solution, 2320
Tichanowsky, J. J., atmospheric pleochroism, 300; capillarity constant, 2418; Martens polarimeter, 541; polarisation of light, 544
Tidmus, J. S., & J. N. Friend, rate of dissolution of zinc, 2377
Tilley, G. S., & O. C. Ralston, copper sulphate solutions, 1526
Timpe, A., rotating bodies, 760
Titow, A. M., moving mirror, 2248
Tödt, F., non-noble radio elements, 722
Toepler, M., waves on wires, 1470
Tolksdorf, S., & H. Mark, X-radiation, 2523
Tolman, R. C., Bohr's correspondence principle, 1392; chemical reaction, 2181
Tolman, R. C., & P. Ehrenfest, weak quantisation, 29
Tolman, R. C., & L. Pauling, entropy, 2730
Tomaschek, R., aberration, 2024; phosphorescence, 555, 1079
Tominaga, H., ammonia, 706
Toussaint, C., & J. Bardet, celtium, 2616
Townend, D. T. A., D. M. Newitt & W. A. Bone, gaseous combustion, 2403
Toy, emulsion fog, 1637*
Toy, F. C., latent image, 1863
Toy, F. C., & H. A. Edgerton, latent photographic image, 92
Toy, F. C., & S. O. Rawling, selenium-cell density meter, 213
Trapesnikoff, O., S. Ščukareff & P. Lukirsky, electrolysis of crystals, 1780
Trendelenburg, F., & H. Riegger, short waves, 648
Trénel, M., electro-chemical measurements, 713
Trevelyan, B., & G. Stead, low-voltage glows, 194
Triandafil, S., galvanic polarisation of nickel, 1998
Tricker, R. A. R., focussing β-rays, 341
Trillat, J. J., fatty acids, 1006, 1818
Trivelli, A. P. H., R. P. Loveland & S. E. Sheppard, photographic sensitivity, 2269
Trivelli, A. P. H., E. P. Wightman & S. E. Sheppard, emulsion fog, 1637; photographic sensitivity, 549, 550
Trobridge, G. W., J. N. Friend, & D. W. Hammond, rate of solution, 2775
Trotman, C. G., J. E. Ramsbottom & D. L. Chapman, hydrogen and oxygen in presence of silver and gold, 1254
Trowbridge, A., infra-red spectroscopy 1643; string galvanometer oscillograph, 419
Trump, R. J., binocular vision, 517
Trumpler, R. J., star-cluster Messier II, 1846
Trumpy, B., & J. Holtsmark, spreading of spectral lines, 1645
Tscherny, S. D., occultation of B.D. — 15°·6169 by Mars, 61; star B.D., 1036
Tschudi, E. W., compression, 2420
Tubandt, C., & H. Reinhold, solid electrolytes, 1775
Turnbull, J. H., J. P. Das & F. W. Grover, ampère trough experiment, 1701

Turner, A., W. H. McCurdy & K. T. Compton, striated glow discharge, 1171
Turner, A., & J. H. Morecroft, electric and magnetic shielding, 1699B
Turner, D., Edith Ervine & V. H. Stott, viscosity, 1792
Turner, H. H., earthquakes, 811; stellar magnitude scales, 2048; Venus, 58
Turner, L. A., kernels of ten electrons of Na, Mg, Al and Si, 67; multiple X-ray ionisation, 2519; quantum defect and atomic number, 28
Turner, L. A., & K. T. Compton, iodine line 2062 Å., 2098; mercury-vapour spectra, 2088; singly ionised atomic mercury, 1889
Tutton, A. E. H., iodo-succinimede, 2228; thallium sulphates, 2014
Tyler, E., & E. G. Richardson, liquid jets, 2421
Tyndall, A. M., & G. C. Grindley, mobility in air of ions, 188
Tyndall, E. P. T., Barkhausen-effect, 677; magnetometer, 420

Ulich, H., dielectric constants, 2758
Ulich, H., P. Walden & O. Werner, dielectric constants, 1730, 2359
Underwood, H. W., Jr., catalysis, 1524
Unsöld, A., Bowen-Millikan shielding doublets, 2711
Urbain, E., vapour absorption by carbon, 1226
Urey, H. C., Zeeman-effect, 364

Vaillant, P., conductivity of solid salts, 1194
du Val, P., antisymmetric tensors, 277; past and future, 1568
Valasek, J., Rochelle salt crystals, 666
Valentin, J., & G. Chaudron, solidification of alloys, 1242
Valentiner, S., & M. Rössiger, fluorescence, 1868
Vallarta, M. S., fine structure, 1874
Valle, G., glow discharge, 2566; Michelson experiment, 1872; optics of system in motion, 2669
Vanoni, E. P., current rectifiers, 2765
Vanselow, A. P., & M. Randall, activity constants, 392
Varney, B. M., atmosphere, 801
Vautier, T., air in pipes, 2554
Vegard, L., cosmic phenomena, 66
Vegard, L., H. K. Onnes & W. H. Keesom, luminescence, 1892
Veil, Suzanne, decomposition of hydrogen peroxide, 1767
Vellan, (Mrs.) E. M., & C. H. Desch, electrolytic deposition, 2804
Vellinger, E., & F. Vlès, rotary power of gelatine, 1629; rotary power of tartaric acid, 1630
Venkataramaiah, Y., & A. Janakiram, phototropically-treated compound, 90
Venkatesachar, B., width of spectral lines, 1085
Vernon, W. S., & H. E. Buckley, crystal structure, 1816
Vernotte, P., & J. Villey, pendular oscillations, 1791
Véron, M., & C. Roszak, thermal radiation, 620
Véronnet, A., planetary orbits, 1597
Viaut, A., & P. Wehrlé, interference in meteorology, 799
Vick, J. O. C., & Sybil Marshall, emission of heat, 2543
Villard, P., electromagnets, 1211; explosion at La Courtine, 398
Villey, J., & P. Vernotte, pendular oscillations, 1791
de Vinney, S. S., & L. R. Ingersoll, sputtered films of nickel, 2609
Vinycomb, T. B., inductance and capacity, 2596
Visher, S. S., sunspots, 304
de Visser, J. C. S., & G. Hertz, excitation of spectral lines, 1876
van Vleck, J. H., absorption of radiation, 322
Vlès, F., *p*H, 1513
Vlès, F., & (Miss) M. Gex, petroleum ultra-violet absorption, 1089
Vlès, F., & E. Vellinger, rotary power of gelatine, 1629; rotary power of tartaric acid, 1630
Vogdes, F. B., & F. R. Elder, three-element tubes, 929
Vogdes, F. B., & D. C. Prince, push-pull valve oscillator, 214
Vogler, H., & P. P. Koch, silver halides, 2686
Vogtherr, K., time, 794
Volbert, F., & H. Ley, absorption in the ultra-violet, 520
Vollenbruck, O., & O. Bauer, copper-tin alloys, 703
Volmar, photolysis, 1859
Volmer, M., adsorption, 1756
Vosburgh, W. C., unsaturated Weston cells, 2630

de Waard, R. H., Weiss theory of ferromagnetism, 2363
Wächtler, M., celluloid in observing strains in structure, 82
Waelsch, E., crystal groups, 1813
Waetzmann, E., & J. Friese, resistance thermometers, 1136; stationary sound waves, 174
Waetzmann, E., J. Friese, & A. v. Hippel, thermo-microphone, 910
Wagner, A., climatic period, 1841
Wagner, C., dilute electrolyte solutions, 741; reaction velocity in solutions, 1765
Wagner, J., & J. P. Arend, reactivity of coke, 443
Wagner, R. V., damping of torsional vibrations, 271

Wagstaffe, C. F. A., & W. H. Eccles, electrical vowel sound production, 1154
Waguet, P., & R. Jouaust, photoelectric photometry, 1353
Wahlin, H. B., mobility of initial positive ions, 1946; positive ions in air, 1716; positive ions in helium, 637
Waibel, F., C. Füchtbauer & E. Holm, absorption line of iodine atom, 358; iodine atom, 1654
Wait, G. R., records of earthquakes, 426
Walden, P., H. Ulich & O. Werner, dielectric constants, 1730, 2359
Walker, A. C., & J. Johnston, air and Co_2 mixtures, 2615
Walker, G. T., meteorology of India, 2238
Walker, O. J., solubility of bi-bivalent salts, 1233
Walker, R. B., & A. E. R. Westman, carbon arcs, 2743
Walker, W. J., critical pressure-ratio for gases, 160
Walter, B., absorption limits, 844; level values of X-ray spectra, 1114; zinc K absorption limit, 2094
Walters, F. M., Jr., arc spectrum of cobalt, 568; nickel arc spectrum, 1651
Walters, F. M., Jr., W. F. Meggers & C. C. Kiess, arc and spark spectra, 849
Walther, A., N. Semenoff & L. Inge, solid insulators, 2150
Warburg, E., Siemens' tubes, 2187
Warburg, E., & W. Rump, ozone, 2186
Ward, F. A., thermal conductivity of bismuth, 147
Ward, R. de C., climates, 2444
Washburn, E. W., physical measurements, 1279; vapour-pressure, 904
Washington, H. S., composition of earth, 1844; distribution of elements, 808
Wasser, E., photoelectric effect, 204
Wataglin, G., quantum conditions, 2028; quantum theory, 1008
Watanabe, Y., ferro-resonance, 2601; triode valve oscillators, 1504B; Tungar rectifier, 2347
Waterman, A. T., thermionic emission, 646
Watson, W. H., superposed X-radiations, 1665
Watson, W. W., emission spectrum of water-vapour, 572
Watt, J. S., mobility of negative ions, 1187
Watters, B. D., quartz-mercury arc, 406
Wavre, R., continental masses, 2239
Wawilow, S. J., fluorescence, 1638, 1868; optical interference, 2267; polarised fluorescence, 2488
Wazau, G., electrolytic nickel, 783
Weatherill, P. F., atomic weight of antimony, 284
Webb, T. J., third law of thermodynamics, 2324
Weber, A. P., Seeman's spectrograph, 1904
Weber, Erna, needle radiation, 2079
Webster, D. L., & P. A. Ross Compton-effect, 1401, 1402; hard X-rays, 1906
Webster, W. L., iron crystals, 1744
Wegner, v. Dallwitz-, R., lubricating oils, 257; viscosity, 2205
Wehnelt, A., & A. Jachan, kathode fall, 1943
Wehrlé, P., & A. Viaut, interference in meteorology, 799
Weigert, F., & G. Käppler, polarised fluorescence, 2489
Weigle, J. J., heat of evaporation of electrons, 1467
v. Weimarn, P. P., dispersed (colloid) state, 2176
Weinberg, M., spark-spectra of indium and gallium, 1102
Weiser, H. B., adsorption, 2768
Weiss, H., X-ray spectography, 2301; X-ray study of alloys, 2387
Weiss, P., magnetic state, 1493
Welo, L. A., & O. Baudisch, transformation of magnetite, 2393
Wendlandt, R., detonation, 2551
Wentworth, C. K., curvature gauge, 247
Wentzel, G., Compton-effect, 2514; dispersion, 338; doublet spectra, 2102; relativistic fine structure, 2494; Röntgen spark-spectra, 1415
Wentzel, G., A. Landé & O. Laporte, "dashed" terms in spectra, 1363
Werner, O., P. Walden & H. Ulich, dielectric constants, 1730, 2359
Werner, S., spark-spectra, 1377
Wernlund, C. J., corrosion, 952
Wertheimer, E., thermodynamic temperature of gas, 2124
Wesolowski, W. A., C. F. Fryling & F. O. Rice, temperature coefficient, 449
Wessel, W., inorganic electrolytes, 2197; lattice energy, 466
West, D. W., & L. A. Levy, X-ray fluorescent screens, 2613
West, J., & W. Mandell, temperature gradient in gases, 1144
West, W., & E. B. Ludlam, ionisation of iodine vapour, 1715; ultra-violet emission spectra, 114
Westgren, A., & G. Phragmén, steel, 469; X-ray analysis of alloys, 2178
Westman, A. E. R., & R. B. Walker, carbon arcs, 2743
Weston, F. R., flame spectra, 2507
Westphal, W., radiation and matter, 2345
Wever, F., rolled cubic crystallising metals, 439
Wheeler, R. V., ignition of gases, 1145
Wheeler, R. V., & S. C. Lind (addendum), ignition of gases, 233

Wheeler, R. V., & W. Mason, ignition of gases, 234
Whiddington, R., vacuum tubes, 2141
Whiddington, R., & F. A. Long, microbalance, 1286
Whipple, F. J. W., lower atmosphere, 1840*
Whipple, R. S., recording instruments, 1787
White, A. G., propagation of flame, 600, 1689
White, J. F., & J. Kendall, isotopes, 478
Whitman, W. G., & D. S. Davis, gas absorption rates, 944
Whitman, W. G., & W. K. Lewis, gas absorption, 686
Whitman, W. G., & R. P. Russell, corrosion, 1984
Whitman, W. G., R. P. Russell & G. H. B. Davis, solubility of ferrous hydroxide, 1232
Whitney, G. W., & E. D. Campbell, steel, 334B
Whitney, W. R., corrosion, 1984
Whittaker, C. W., & E. J. Fox, cement dust, 705
Wick, F. G., kathodo-luminescence of fluorite, 105
Wick, F. G., & J. M. Gleason, kathodo-phosphorescence, 837
Wicksell, S. D., globular distributions, 777
Widdowson, W. P., & A. S. Russell, mesothorium 2, 1423
Wiederholt, W., & E. Liebreich, nickel and aluminium current voltage curves, 1271
Wiegand, E., Nernst lamp, 349
Wien, M., viscosity, 2797
Wien, M., & J. Malsch, electrolytic resistances, 657
Wien, W., canal rays, 1185; positive rays, 2580
Wiener, O., flowing ether, 1007; force-free flowing ether, 761
Wiese, W., mean atmospheric temperature, 1577
Wiesner, S., specific heats, 1143, 2118
Wigand, A., penetration radiation, 380; visibility, 2676
Wigand, A., & T. Schlomka, electric potential, 180
Wightman, E. P., S. E. Sheppard & A. P. H. Trivelli, emulsion fog, 1637; photographic sensitivity, 549, 550
Wigner, E., & M. Polányi, formation of molecules, 2430
Wilcken, J. A., Poynting flux, 1160; reflection of waves, 1082; transient electric phenomena, 2361
Wilke, E., & O. Kieninger, activity coefficients, 2631
Wilkin, R. E., & R. E. Wilson, Koehler safety lamp, 602
Williams, A. M., surface tension, surface energy and surface layer, 150
Williams, A. S., Gemini, 52
Williams, E. G., & E. K. Rideal, ferrous ferric iodine iodide equilibrium, 1078
Williams, E. J., electrical resistance, 2148
Williams, J. W., & F. Daniels, specific heats, 2539
Williams, N. H., & A. W. Hull, shot-effect, 1458
Williams, S. R., magnetic induction in nickel, 1218
Williams, Wynn-, C. E., range of oscillograph, 2595
Williamson, R. V., & J. H. Mathews, absorption carbon dioxide, 689
Williamson, W. T. H., & W. O. Kermack, suspensions, 1760
Wilmotte, R. M., two equal coaxial coils, 1972
Wilsdon, B. H., magnetic properties of atoms and molecules, 1977; non-polar band, 1322; polar link, 1824
Wilsey, R. B., fog correction, 2684
Wilson, C. T. R., β-particles, 1683
Wilson, C. T. R., & G. I. Taylor, soap-bubbles in electric field, 2331
Wilson, E. B., Coulomb's law, 634
Wilson, E. B., & W. J. Luyten, parallaxes, 2049; statistical distribution of stellar mass, 495
Wilson, H. H., & H. Shapley, Magellanic cloud, 2045
Wilson, R. E., class O stars, 505
Wilson, R. E., & W. H. Bahlke, corrosion, 1984
Wilson, R. E., & R. E. Wilkin, Koehler safety lamps, 602
Winter, R. M., & T. Barratt, thermal conductivity, 1424
Wintner, A., perihelion formula, 2656
Wismer, K. L., C. S. Gilbert & F. B. Kenrick, superheating of liquids, 594
Wismer, K. L., K. S. Wyatt & F. B. Kenrick, supersaturation of gases, 605
v. Wiśniewski, F. J., absorption limits of K-series, 113; arc spectrum of sodium, 571; spark spectrum of aluminium, 570
Witmer, E. E., alpha-ray luminescence, 883
Witt, H., absorption spectrum of water-vapour, 112; spectrometric test in the infra-red, 111
Wöhlisch, E., stoichiometry, 1553
Wolf, K. L., & K. F. Herzfeld, dispersion formula, 1070, 1854
Wolff, W., amplification, 1472
Woltjer, W., Jr., perturbations, 1310
Woo, Y. H., scattering of X-rays, 1408
Wood, R. W., mercury-vapour, 841
Wood, R. W., & A. Ellett, resonance radiation, 99
Woods, Amy I., & W. B. Morton, air waves, 161
Woolard, E. W., random series, 2030
Wooster, W. A., & C. D. Ellis, γ-rays, 2533

Woronkoff, G. P., & G. I. Pokrowski, depolarisation of light, 2679
Woronkoff, G. P., & G. J. Pokrowski, polarisation of light, 545
Worthing, A. G., melting-point of molybdenum, 2307
Worthing, A. G., & W. E. Forsythe, potentiometer, 2155
Wosnessensky, S., cells, 2190
Wright, F. E., spherical triangles, 464
Wrinch, D. M., electric capacity, 2132; fluid circulation, 1301; hydrodynamics, 763
Würschmidt, J., permanent magnets, 421
Würschmidt, J., & F. Stäblein, current distribution in a wheel, 344B
Würst, J., & E. Lange, heats of solutions, 599, 2319
Wulf, T., Geiger counter, 2116
Wyatt, K. S., K. L. Wismer & F. B. Kenrick, supersaturation of gases, 605
Wyckoff, R. W. G., crystal structure (Ag_3XO_4), 2436
Wynn-Williams, C E., range of oscillograph, 2595

Yamada, N., long-range particles, 2114; particles from polonium, 1421
Yamada, N., & Irène Curie, α-particles from polonium, 137; long-range particles, 2113
Yamamoto, I., solar constant, 1037; radio coils, 1057B
Yamamoto, I., & L. Campbell, W Hydræ, 1590
Yamazaki, K., K. Terazawa & Y. Akishino, aeronautical kinematographs, 548
Yang, Y. C., Millikan condenser, 1446
Yardley, Kathleen, iodo-succinimede, 2227
Yardley, Kathleen, & W. T. Astbury, 230 space-groups by homogeneous X-rays, 25
Yensen, T. D., 50 % iron-nickel alloy, 1747
Young, A. F. A., & O. W. Richardson, thermionic work-functions, 1720
Young, J., Thomson-effect, 1965
Young, J. F. T., A. B. McLay & J. C. McLennan, lead spectra, 868; tin spectra, 867
Young, R. K., & W. E. Harper, absolute magnitudes, 1847
Young, T. F., & A. R. Olson, vacuum discharge tubes, 1176
Yovanovitch, D. K., & (Mme.) P. Curie, heat from radium salts, 1675
Yovanovitch, D. K., & J. d'Espine, magnetic spectrum of β-rays of ThB + C, 1105

Zahn, C. T., electric moment, 608
Zahn, H., dielectric constant of water, 1479
Zambonini, F., rare earths, 294
Zaumeyer, R. J., & C. M. Kurtz, corrosion, 2780
Zeeman, P., radiating atoms, 1901
Zeilinger, F., Brownian movement, 27
v. Zeipel, H., radiative equilibrium, 49, 50, 51, 2454
Zeleny, J., dark discharges, 182
Zeleny, J., & L.Page, cyclindrical magnet-carrying current, 633
Zenneck, J., damped and undamped vibrations, 414
Zerner, F., ether drift, 2240
Zimmerman, A. C., corrosion, 1984
Zimmermann, H., bent rods, 759
Zintl, E., with experiments by A. Rauch, potentiometric titration, 2637
Zocher, H., & F. Reinicke, lustre, 2461
Zocher, H., F. Stapelfeldt & H. Freundlich, flow anisotropy, 813
Zöllner, E., & B. Neumann, vacuum evaporators, 1134
Zschaage, W., electrolytic trough, 1553B
Zsigmondy, R., & E. Hückel, colloidal gold sols, 2383
Zsigmondy, R., & E. Joël, gold sols, 695
Zuber, K., spark discharge time of lag, 1173
Zumstein, R. V., absorption spectra, 1378; Pb absorption spectrum, 2508; tungsten X-ray emission, 2106
Zwikker, C , tungsten, 2668
van Zyl, G., & A. L. Ferguson, decomposition potentials, 940

SUBJECT INDEX.

SECTION A.—PHYSICS.

To facilitate reference to any desired subject the Index is divided into the following sections arranged alphabetically. If any of these are absent this may be taken as an indication that no Abstracts dealing with these particular subjects have been included in this volume.

The numbers refer to Abstracts; if the letter B follows a number the Abstract will be found in Section B of "Science Abstracts" under that number.

In General Physics:—Apparatus and Instruments; Astronomy; Crystals and Crystal Structure; Density; Diffusion; Dynamics and General Mechanics; Elasticity; Gravitation; Measurements and Use of Instruments; Meteorology, &c.; Miscellaneous; Molecular Physics, Matter and Ether; Pressures (high and low); Relativity; Surface Tension; Terrestrial Physics; Theories; Viscosity.

In Light:—Absorption (light and heat); Dispersion; Interference; Lenses and Optical Systems; Measurements and Use of Instruments; Miscellaneous; Phosphorescence and Fluorescence; Photography; Photometry; Polarisation (including Magnetic Rotation); Radio-activity; Rays and Radiation (Light); Reflection of Light; Refraction of Light; Spectra; Vision; X-Rays; Zeeman-Effect and Radiation in an Electric or Magnetic Field.

In Heat:—Absorption; Conductivity; Critical Points and Constants; Dilatation; Freezing-, Melting-, and Boiling-Points; Gases and Vapours; Measurements and Use of Instruments; Miscellaneous; Radiation (Heat), Convection, and Emissivity; Specific Heat and Latent Heat; Temperature; Temperatures (high and low); Thermodynamics; Thermometry, Pyrometry, and Calorimetry; Vapour Pressure.

In Sound:—All Abstracts referring to this subject have been indexed under *Sound*.

In Electricity and Magnetism:—Alternate-Current Research; Apparatus and Instruments (descriptive); Capacity (electrostatic); Conductivity (Electric) and Resistivity; Dielectrics; Discharge in Gases and in Vacuo; Electromagnetic Theory; Electro-Physiology, Electro Therapeutics, Radio Therapy, and Radiography; Inductance (self and mutual); Ionisation and Dissociation of Gases; Magnetism; Measurements and Use of Instruments; Miscellaneous: Oscillations and Waves; Photo-Electricity; Polarisation (electric waves); Polarisation (electrolytic); Resonance; Static and Atmospheric Electricity; Terrestrial Magnetism and Electricity; Thermionic and Electronic (Thermal) Emission; Thermo-Electricity and Thermo-Magnetism.

In Chemical Physics:—Absorption; Alloys; Batteries (primary); Batteries (secondary); Chemical Equilibrium and Reactions; Dissociation and Ionisation (excluding Gases); Electric Furnace Processes; Electrolysis; Electrolytic Analysis; Metallography and Properties of Metals; Miscellaneous; Osmosis; Solution and Solubility.

Abstract Nos.

Absorption (Chemical Physics).

Absorbed Substances, Thermodynamic Consequences from Equation of State for. M. Volmer 1756

Adsorption. F. Schelte 1223

,, and Schulze's Law. H. B. Weiser 2768

,, and Surface Energy at Boundaries of Different Phases. B. Iliin.. 2617

,, from Gas Phase at Liquid Gas Interface. Part III. T. Iredale .. 1755

,, from Solution from Standpoint of Capillarity, Studies in. W. A. Patrick and N. F. Eberman 1225

,, from Solution from Standpoint of Capillarity, Studies in. W. A. Patrick and D. C. Jones 1224

,, in Vicinity of Critical Temperature. W. A. Patrick, W. C. Preston and A. E. Owens 1753

,, Isotherms, Derivation of. A. Gorbatschew 2767

,, , Cryoscopic Method for. H. L. Richardson and P. W. Robertson. 1757

,, , Electrical Theory of. B. Iliin..... 2372

,, , Studies in. Part X. S. Ghosh and N. R. Dhar 1754

Abstract Nos.

Absorption (Chemical Physics), *continued.*
Ammonia and Carbon Dioxide by Glass, Sorption of. D H. Bangham and F. P. Burt 1499
Carbon, Absorption of Vapours by. E. Urbain 1226
Contact Catalysis, Third Report of Committee on. H. S. Taylor 454
Diffusion Potentials and Ionic Mobilities of Benzoates and Salicylates and their Modification by a Membrane of Parchment Paper. E. B. R. Prideaux and W. E. Crooks 225
Electro-osmotic Experiments on Intensity of Absorption of Constituent Ion by an Insoluble Salt. Part. I. J. N. Mukherjee and H. L. Ray..... 1500
Gas Absorption, Principles of. W. K. Lewis and W. G. Whitman 686
,, Films, Removal of. W. D. Bancroft 1230
,, -Sorption. D. H. Bangham and W. Sever 1983
Gases, Comparative Absorption Rates for. W. G. Whitman and D. S. Davis.. 944
Gold Adsorption, Activated Char for. R. H. McKee and P. M. Horton 1228
Hydrogen Sulphide, Absorption of. F. W. Sperr, Jr..... 945
Ions, Mechanism of Adsorption of. R. Audubert and Marguerite Quintin.... 1758
Moderately Soluble Gases in Water, Mechanism of Absorption of. H. G. Becker 687
Osmotic Pressure, Imbibition Pressure and Adsorption, Relation between. M. Polányi 1229
Rate of Absorption and Equilibrium of Carbon Dioxide in Alkaline Solutions. R. V. Williamson and J. H. Mathews 689
,, ,, , Effect of Gas Velocity and Temperature on. R. T. Haslam, R. L. Hershey and R. H. Keen 688
Silica Gel, Adsorption of Nitrogen Peroxide by. R. C. Ray 1227
Silver Salts, Adsorption of, by Silver Iodide. J. S. Beekley and H. S. Taylor.. 2766
Swelling Phenomena, Significance of Röntgen Spectrography in. J. R. Katz 1239

Absorption (Light and Heat).
Absorption of Light and Quantum Theory. C. Bialobrzeski..... 1333
,, of Radiation by Multiple Periodic Orbits. Parts I and II. J. H. van Vleck 322
,, Phenomena in Photoelectrically-conducting NaCl Crystals. Z. Gyulai 2483
,, , Selective, of Coloured Glasses. Marya Kahanowicz and Ada Estrafalaces 323
Acids, Undissociated, Nature of. H. v. Halban 830
Alkali Halides by X-Rays, Colouration of. P. L. Bayley 581
Cæsium Solid, Optical Constants of. J. B. Nathanson 1052
Chromatic Visibility Coefficients by Method of Least Squares. D. B. Judd.... 2065
Coefficients of Absorption of Light in Fluorescent Substances, Measurement of. S. Pienkowski and A. Jablonski..... 2662
Colloidal Metallic Suspensions, Colour Theory of. G. Jobst 2062
Colorimetric Purity, Formula for. I. G. Priest 316
Colour. L. C. Martin 1050
,, of the Sea. W. Shoulejkin 816
,, Theory, Problems of. J. v. Kries 815
Coloured Glass Used in Optical Pyrometry, Effective Wave-Length of. F. Henning 817
Complementary Colours, Remarks on. H. Schulz 1611
Diffusion of Light in Fluids, Theory of. Y. Rocard 543
Dissolved Salts, Optical Absorption of. H. v. Halban and L. Ebert 318
Dye Solutions, Absorption Curves of. T. Ōtashiro 319
Glass Plates or Prisms, Transmission of. J. Barot 325
Inorganic Halides, Absorption of Ultra-violet Light by. F. H. Getman..... 2251
Interior Diffusion and True Absorption of Light. T. Bialobjeski 542
Iridescent Colours, Origin of. E. Merritt 2661
Light, Biological Action of. L. Hill 1849
Liquids, Absorption Coefficients of, and their Vapours in Infra-red. T. Dreisch 1056
Lithium, Chemistry of Relation between Contraction, Refraction and Absorption of Light in Aqueous Salt Solutions. G. F. Hüttig and M. Keller.. 2464
L Levels for Radiation of Varying Wave-length, Relative Absorbing Powers of. H. W. B. Skinner 100
Magnesium and Zinc Crystals, Optical Constants of. M. E. Graber..... 2665

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Absorption (Light and Heat), *continued.*
Matter, Optical Constants of. C. G. Darwin 829
Maxwell Disc, Spectral Distribution of Mixtures produced by. D. B. Judd.. 818
Methane and its Absorption in the Ultra-violet, Critical Potential of. G. Glockler 1466
Naphthalene, Absorption of Ultra-violet Rays by Methyl Derivatives of. H. de László 1055
Natural Light in Metallography, Simulating. H. S. George 819
Nobili's Rings, Colours shown by. B. N. Chuckerbutti 315
Opalescence of Binary Liquid Mixtures. J. C. K. Rav 328
Optically Non-homogeneous Media, Absorption of Light in. G. I. Pokrowski 1612
Paint Vehicles and Pigments in Ultra-violet, Observations of Spectro-photometric Measurements of. G. F. A. Stutz 2273
Pigments, Bright, Physical Definition of Colours of. T. Oryng and E. Schrödinger 1332
Quantum Equivalent by Photoelectric Conduction in Rock-salt Crystals. Z. Gyulai 1968
Röntgen Rays, Absorption of, *see* section X-Rays.
Selenium and Tellurium for Wave-lengths from 3000 to 5000 Å., Optical Constants of Crystals of. R F. Miller 2066
Spectra, Absorption, *see* separate section.
Temper Colours. C. W. Mason 317
Trichromatic Mixture Data, Transformation of : Algebraic Methods. J. Guild 2252
Thin Films on Metals, Colours due to. U. R. Evans 1331
Ultra-violet Absorption in Petroleum. F. Vlès and (Miss) M. Gex 1089
,, ,, in very Dilute Solutions. R. Suhrmann and P. Huppert 2463
,, Light, Absorption of, in Dilute Solutions. C. J. W. Grieveson... 1848
,, Rays, Absorption of, by Skin and its Therapeutical Applications. J. Saidman 1090
,, , Absorption Measurements in, by Photographic Photometry. H. Ley and F. Volbert 520
,, , Absorptions in. G. M. Pool 519
Vanadium Pentoxide Sol, Quantitative Investigations on. I. Flow Anisotropy. II. The Eddy Cross. H. Freundlich, F. Stapelfeldt and H. Zocher 813
Visibility of the Spectrum. S. Hecht 102
Visual Acuity and Colour. M. Luckiesh and F. K. Moss 1616

Alloys, *see also* section Metallography.
Alkali Metals and their Alloys, Normal and Selective Photoelectric Effects in. H. E. Ives and A. L. Johnsrud 660
Alloys and Amalgams of Manganese, Electrolytic Formation of. A. N. Campbell 715
,, , X-Ray Examination of. A. Sacklowski 2622
Aluminium Alloy, New. V. Fuss 227
,, Alloys, Comparative Tensile Properties of. E. H. Dix, Jr., and A. J. Lyon 956
,, Cast Alloys, Containing Small Amounts of Magnesium. S. Daniels 960
,, Solders. L. Rostosky 228
,, -Zinc System, Studies in. T. Tanabe 700
Beryllium, Metallurgy and Alloys of. E. A. Engle and B. S. Hopkins..... 1276
Brass Tubes, Method for Measuring Internal Stress in. R. J. Anderson and E. G. Fahlman 758
,, $(\alpha + \gamma)$, Eutectic in. W. Heike and K. Ledebur 436
,, , Electrolytic, X-Ray Analysis of. H. Nakamura 2177
,, , Further Study of Dezincification of. C. F. Nixon 955
Bronze, High-Tin. F. W. Rowe..... 957
Copper-Tin Alloys, Hardness of. O. Bauer and O. Vollenbruck 703
,, ,, Equilibrium Diagram. T. Isihara..... 958
,, -Zinc, Silver-Zinc, and Gold-Zinc Alloys, X-Ray Analysis of. A. Westgren and G. Phragmén 2178
Corrosion-resisting Alloy, Tests for Grading. W. E. Erickson and L. A. Kirst 2781
Electrolytic Alloys, *see* section Electrolysis.
,, Iron and its Alloys melted *in vacuo* and rolled into Sheet, Magnetic and Electric Properties of. M. Fukuda 417

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Alloys, *see also* section Metallography, *continued.*
Equilibrium Diagram, Practical Importance of. D. Hanson 1511
Gold and Copper, Alloys of. E. Sedström 701
Iron Alloys, Cementing of, by Chromium. J. Laissus 2386
,, and Steel, *see* section Metallography.
Magnetic Properties of Alloys, *see* section Magnetism.
Metallic Alloys, Equilibrium Conditions for, in Liquid and Solid States with Application to Gold-Silver Alloys. V. Fischer 1988
,, ,, , X-Ray Examination of. H. Lange 1763
Metallography, *see* separate section.
Monocrystals, Strengthening of, by Alloying and Stretching. P. Rosbaud and E. Schmid 1817
Nickel and its Alloys 702
,, Steels near Point of Transformation, Elastic Tension and Magnetic Behaviour of. W. del Regno 959
Non-ferrous Metallurgy in United States, Recent Developments in, with Special Reference to Nickel and Aluminium Bronze. W. M. Corse... 1250
Partition of Silver between Lead and Zinc. W. A. Naish 2786
Propeller Brass. A. Logan 953
Quenched Alloys, Ageing Effect of. I. Igarasi..... 437
Repeatedly Reversed Stresses, Materials under. L. Jannin 750
Stellite and Similar Alloys. E. H Schulz and C. W. Drescher..... 438
Structure of Metals under Test. M. Polányi and E. Schmid..... 961
Ternary Alloys Al-Mg-Cd, Solidification of. J. Valentin and G. Chaudron... 1242
Volume Changes of Alloys during Solidification. H. Endô 1241
X-Rays, Application of, to Study of Alloys. H. Weiss 2387

Alternate-Current Research.
Alternating-Current Circuits, Reciprocal Relations in K. Matthies and F. Strecker 674
Aluminium Valve, Oscillograph Study of. F. H. Newman 1971
Amplifiers with Reaction, Theory of. G. Filippini 413
Arc, Electric, *see also* section Discharge.
Co-axial Coils, Two Equal, Field of Force near Neutral Circle between. R. M. Wilmotte 1972
Coils for Radio Use, Systematic Study of Self-capacity of. I. Yamamoto....1057B
,, of Rectangular Cross-section, Calculation of Inductance of. H. Hemmeter 208
,, Wound on Rectangular Frames, with Special Reference to Calculation of Inductances, Study of. Y. Niwa 943
Conductor carrying Alternating Current, Measurement of the Current Distribution in. H. Busch 2600
Contact Detectors, Rectifying Action of. I. Stranski..... 412
Crystal Rectification of Alternating Currents. A. C. James 1962
Cylindrical Conductors, Current Distribution in. F. Fischer..... 2599
Damped and Undamped Vibrations, System which reacts differently to. J. Zenneck 414
Direct and Broken Relative Frequencies, Production of, with Iron Chokes without Previous Magnetising. L. Kasarnowski 1210
Disturbed Superposition, Systems with. K. Heegner..... 2362
Frequencies by Kathode-Ray Tube, Comparison of. D W. Dye..... 1970
Frequency of Alternating Currents by Vibrations of Rods, Determination of. G. F. C. Searle 1736
Identical Electrical Networks in Series. A. E. Kennelly 2761
Induction Coil, Measurement of Natural Frequency of. H. Nukiyama and K. Kobayashi 673
,, Coils, Experiments on. J. A. Crowther 1973
Iron, Perfectly Insulated, Explanation of Surface Effect in Propagation of Electric Waves in. A. Léauté..... 927
Jumping Phenomena in Ferro-resonance. Y. Watanabe 2601
Magnetic Induction, Contribution to Study of. J. Schwarz 2610
Measurements, *see* separate section.
Mutual Inductance of Circuits with Circular Symmetry about a Common Axis, Tables for Calculation of. F. W. Grover 1738
,, ,, of Two Co-axial Circles, Formulæ, Tables, and Curves for Computing. H. L. Curtis and C. Matilda Sparks 942

For the **Explanation** of this Index see p. 947

Abstract Nos.

Alternate-Current Research, *continued.*

Mutual Inductances at Telephonic Frequencies, Comparison of. L. Hartshorn 1737
Non-inductive Circuit, Transient Electric Phenomena in. J. A. Wilcken..... 2361
Primary Radio-frequency Standardisation by Use of the Kathode-Ray Oscillograph. Grace Hazen and Frieda Kenyon 668
Rectification of Alternating Current by Means of Hall-Effect. R. Sarek..... 1490
Resistance in Terms of Mutual Inductance, Determination of. A. Campbell.. 1731
Sulphuric Acid, Passage of Alternating Current through. R. T. Lattey 2598
Systems with disturbed Superposition, Self-exciting Phenomena in. K. Heegner 173
Three-Terminal Conducting Networks. A. E. Kennelly 385B
Triphase System into Constant and Pulsating Energy, Decomposition of Energy of. L. G. Stokvis 1209
Two-Dimensional and Axially Symmetrical Fields. P. Andronescu 1488
,, -Layer Coil, Short, Determination of Free Period of. A. Goosmann 1192
,, -Mesh Circuits, Driving-point Impedance of. R. M. Foster 575B
Ultra-Radio Frequencies, Theory of Determination of, by Standing Waves on Wires. A. Hund 941
Undulating Current Magnetisation and its Measurement with Instruments containing Iron. M. Stöckl 675
Wave-Forms, Deviation Coefficient for. L. Legros 672

Apparatus and Instruments.

Actinometers with Electrodes coated with Silver Iodide and Copper Oxide, Sensitivity of. G. Athanasiu..... 2672
,, with Mercury Electrodes, Sensitiveness of. G. Athanasiu 1525
Altitude, Hot-wire Instruments for Measuring. E. Huguenard, A. Magnan and A. Planiol 1536
Apparatus, Simple, for Obtaining Comparative Measurements of Resistances of Medium Insulators. A. J. Philpot..... 1483
Balance, Automatic and Continuous Recording (the Odén-Keen Balance). J. R. H. Coutts, E. M. Crowther, B. A. Keen and S. Odén 736
,, , Torsion, Rapid-Weighing. Research Staff of the General Electric Co., London 1285
Balances, Laboratory, Improvements in. W. Block..... 2000
Ballistic Galvanometers, Methods of Varying Sensitiveness of. M. Masius .. 1484
,, ,, , Universal Calibration Curve for. D. P. Randall 1203
Barograph, Surveying 2203
Barometers, Aneroid, and Barographs, Improvements in. E. Becker..... 249
Bourdon Tube Pressure Gauge. C. Sunatani 737
Boyle's Law, New Design for Apparatus to Measure Coefficient of Deviation from, and Determination of this Coefficient for Acetylene. J. T. Howarth and F. P. Burt 2123
Broadening Spectra, Apparatus for. W. J. S. Lockyer 820
Camera, Recording, taking Short Lengths of Film. J. S. G. Thomas and E. Simeon 1620
Chronometer Spirals with Pinching Pieces (Vetterlein System). H. Bock 254
Combustion Bomb, Small, and Micro-Calorimeter. W. A. Roth, H. Ginsberg and R. Lassé 153
Constant Voltage High-tension Generators. C. E. S. Phillips 2369
Continuous Current, 500,000-volt, New Generator of. d'Arsonval, with remarks by J. Perrin 1981
Crookes Tube. A. Dauvillier 2587
Curvature Gauge. C. K. Wentworth 247
Curve Analyser. C. F. Sacia 535
Desensitisers, Photographic, and Distortions on Plates due to Local Desensitising, Characteristics of. F. E. Ross 2680
Densitometers, Precision, for Photographic Photometry. G. R. Harrison 1345
Dilatometers 959B
Displaceometer. F. J. Schlink 2204
Drift Indicator. J. N. Carruthers 253
Electrical Counter, Action of. K. G. Emeléus 2342
Electro-Chemical Potential Measurements, Simple Apparatus for. M. Tréne 713
Electrolytic Interrupter. J. A. Crowther and R. J. Stephenson 2360
Electromagnet, Centenary of, and William Sturgeon. J. A. Fleming 2156

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Apparatus and Instruments, *continued.*

Electromagnets, Construction of. P. Villard 1211
Electro-Microphotometer, New, of Tübingen Observatory (Oésterberg). H. Rosenberg 2257
Electrostatic Voltmeters and Slow Tubes for High-frequency Pressure Measurements. A. Palm 2597
Etalon, Fabry and Perot. J. K. Robertson 343
Ethyl Ether, Liquid, at 0° and 12°, Specific Heat and Heat of Vaporisation of. F. G. Keyes and J. A. Beattie 154
Filter, Spectral White-light. H. Naumann 2465
Flow Calorimeter for Specific Heat of Gases. N. S. Osborne, H. F. Stimson and T. S. Sligh, Jr. 2538
,, of Gases at High Pressures, Pressure Governors for Controlling. J. S. G. Thomas 604
Fluid Motion, Apparatus for Investigating Certain Types of. E. N. da C. Andrade and J. W. Lewis 252
Fractionnating Columns with Moving Parts. J. E. Myers and W. J. Jones... 991
Frequency Meter of Long Range, Direct-Reading. A. Campbell 1486
,, ,, , Electrolytic, of Simple Construction. A. P. Rollet 1202
Frigorimeter, Davos. Instrument for Permanently Registering Extent of Physiological Cooling. R. Thilenius and C. Dorno 1430
Gas-Analysis Apparatus, Multiple. M. N. J. Dirken 603
Geiger Counter. T. Wulf 2116
Gelatine on Rigid Supports, Instrument for Measuring Swelling of. S. E. Sheppard and F. A. Elliott 246
Gridless Receiving and Amplifying Valves with Control Plates. H. Cohn ... 650
Gyro-Compass incorporating Two Gyroscopes. J. B. Henderson..... 1288
Heating Value of Gas, Measurement of. C. V. Boys 394
Helmholtz Resonator with Hyperboloidal Mouth, Frequency of. A. T. Jones. 1934
,, ,, , Additions to Theory of. A. T. Jones 1933
Hydrogen Liquefying Cycle and Cryostat for the Maintenance of Low Temperatures. W. M. Latimer, R. M. Buffington and H. D. Hoenshel..... 2117
Hysteresigraph with Two Mirrors at Right Angles on Synchronous Damped Coils. C. Lapp 2612
Hysteresis Coefficients, Apparatus for Determination of. A. Blondel..... 2607
Illuminator, Monochromatic, for Infra-red and Ultra-violet. G. Athanasiu .. 1619
Incandescent Lamp with Quartz Window. D. C. Stockbarger 1618
Indicator, Acoustic Relative Velocity, for Aeroplanes. A. de G. de Guiche... 1290
Insulator Test Set, Portable. N. P. Carlsen..... 51B
Intensities of Signals by Means of New Oscillograph, Measurement of Modulation and Comparison of. R. Dubois 921B
Interferometer Methods of Measuring Close Double Stars and Fixed Star Diameters. K. F. Bottlinger 1060
,, , Rayleigh. B. W. Clack 1853
Kathode-Ray Oscillograph with Electrostatic Focussing. L. T. Jones and H. G. Tasker 669
Koehler Safety Lamp, Use of, in Testing Tanks for Combustible Gases or Vapours. R. E. Wilson and R. E. Wilkin 602
Latitude and Time, New Instrument for Determining. E. Paloque 511
Light Filter for Mercury Line 2537. O. Oldenberg 540
Magnetic Bridge for Testing Straight Specimens and Analysis of Hysteresis Loop of Cobalt-Chrome Steel. E. Hughes 2166
,, Fields, New Apparatus for Measurement of. F. Schröter..... 671
,, Standards and Instruments and Methods of Aerial Magnetic Measurements, Report of Committee on. J. A. Fleming 678
Magnetometer, Null-reading Astatic. R. M. Bozorth 2165
,, , Sensitive, Insensitive to Extraneous Disturbances. E. P. T. Tyndall..... 420
Magnifying Power of Microscope, Apparatus for determining. E. Judin..... 531
Mass Rays, Photographic Plates for Detection of. F. W. Aston 1622
Measuring Instruments, Bibliography for. F. J. Schlink 251
Meridian Instrument. C. V. Boys 539
Meteorological Instruments and Apparatus employed at the United States Weather Bureau. R. N. Covert 1283
,, ,, , Self-recording, Electrical Time-marking System for. L. H. G. Dines 250

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Apparatus and Instruments, *continued.*

Mica Condenser, Variable. H. G. Dorsey 179
Micro-Calorimeter and Small Combustion Bomb. W. A. Roth and R. Lassé.. 895
,, -Camera, Multi-Lens Automatic. A. J. Dalladay, J. P. Anderson and F. F. S. Bryson 1621
,, -Melting-point Apparatus. J. F. Clevenger 155
Micrometers and Measuring Instruments. P. Duckert 1287, 1788
Microphotometer, Recording, with Photoelectric Cell. P. Lambert and D. Chalonge 1625
Microturbidimeter. O. E. Conklin 2202
Microvoltages at Radio Frequencies, Potentiometer Arrangement for Measuring. A. G. Jensen 2759
Mirrors, Large Telescopic, New Method of Constructing. G. W. Ritchey..... 2474
Nephelometer, New Type of. R. Kingslake 2068
Nephelometry and Suggested Sensitive Test for Stability of Explosives, Some Notes on. A. F. C. Pollard 2069
Oppau and La Courtine Explosions. Rothé, Lacoste, Bois, (Miss) Dammann and (Miss) Hée 906
Optical Constants of Crystals in Ultra-violet, Arrangement for Measuring. P. Sève 2256
Optics, Institute of: Theoretical and Applied. A. de G. de Guiche 1347
Optometer for Visual and Chromatic Acuity. E. Guérin 327
Oscillograph, Low-voltage Electron-beam. J. W. Buchta 2153
,, , New Electromagnetic, of Great Sensitiveness. R. Dubois 1357B
Ozoniser, Laboratory, Yielding High Concentrations of Ozone. L. I. Smith.. 2400
Pendulum, Herbert: Hardness Tests. R. Mouillac 2001
,, , ,, , Tests with. L. Guillet and J. Galibourg 2002
Periodiscope. H. de Miffonis 68
Phonodeik, Design and Calibration of. S. H. Anderson 2733
Photoelectric Thresholds of Elements under Ordinary Conditions. R. Hamer 205
Photographic Recorder for Temperature and other Physical Quantities. W. H. Stannard and P. E. Klopsteg 340
,, ,, , Simple, and Oscillograph. A. Perot 1206
Photometer, Automatic Registration. E. Albrecht and M. Dorneich 2674
,, , Universal Portable. A. Blondel 2673
Photometric Comparator. C. Pulfrich 1626
Picnometer, New, Densities of Certain Aqueous Potassium Chloride Solutions as determined with. H. C. Parker and Elizabeth W. Parker 1280
Piezo-electric Standards of High Frequency. W. G. Cady 1734
Planetarium, Optical, at Munich 512
Polarimeter, Martens, Theory of. J. J. Tichanowsky 541
,, , Universal. C. A. Skinner 1852
Polarisation Capacity and Electrical Double Layer. A. L. Clark..... 983
,, Prisms, Theory of. VIII. Prisms of Spar and Glass. H. Schulz. 538
Potassium as Mercury-Vapour Trap. A. L. Hughes and F. E. Poindexter.... 2311
Potentiometer, Simple Drum Type, and Design for Double Potentiometer, Two Modifications of. A. G. Worthing and W. E. Forsythe 2155
Pressure Gauge, Pfund's, Study of. R. T. Cox 396
Prism Spectroscope, Curvature of Spectral Lines in. G. Subrahmaniam and D. Gunnayya 81
Pump, Air-Lift, with Special Reference to Slip of Air Bubbles in Water. O. Miyagi 740
,, , Extreme Vacuum, and Adsorption Manometer. M. A. Schirmann.... 739
,, , Sprengel, Notes concerning. J. J. Manley 1789
Pumps, High-Vacuum. H. Ebert 738
Pupillometer. A. Broca 525
Pyrheliometer, Recording. L. Gorczyński 537
Pyrometers, Optical, *see also* section Thermometry.
,, , ,, . W. E. Forsythe 1137
Quartzglass Apparatus for Estimation of Coefficient of Expansion by Heat at High Temperatures. H. Sieglerschmidt 2537
Radiation Therapy, Simple Accessory in. P. A. Schultz 685
Radiometer, Nichols. J. D. Tear 2479
,, , Oxalic Acid-Uranyl Ultra-violet. W. T. Anderson, Jr., and F. W. Robinson 1634
Rain Gauge of Standard Commercial Materials and Parts. B. C. Kadel 2236

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Apparatus and Instruments, *continued.*

Rayleigh Photometer, Modification of. A. Blondel 2480
Recorder, Cambridge Stress, Collins' Patent 1289
,, , Pressure-Time, for Closed Vessel Experiments. D. R. Pye 1535
Recording Instruments, New. R. S. Whipple 1787
Reflecting Telescope for Simeis Observatory, Crimea 533
Refractometer, Precision, for Liquids. A. Lafay 1346
Resistance Boxes, etc., Design of Electrical Contacts for. G. Barlow and H. B. Keene 1735
Rubber, Steel and other Materials, Examination of Elastic Properties of. L. Hock 1295
Scale Viscometer and Viscoscope. R. v. Dallwitz-Wegner 2205
Selenium-Cell Density Meter. F. C. Toy and S. O. Rawling 213
,, Contact Rectifiers, Effect of Light on Behaviour of. E. Merritt 2753
,, Crystal Bridges, Two New. A. M. McMahon and F. C. Brown 2760
Sensitometer, New Non-Intermittent. A. C. Hardy 1344
Short Electromagnetic Waves, Device for Demonstrating. R. M. Fisher 2146
,, Wave-length Oscillations in Electron Tubes, Method of producing. G. Breit 1190
,, Wave X-Ray Spectrograph and some K-series Emission Wave-lengths. J. M. Cork 1412
Sky, Whole, Apparatus to Photograph. C. Beck 1059
Specific Heats of Aqueous Solutions, including Results for Various Salts and Organic Acids, Improved Differential Method for Exact Determination of. T. W. Richards and F. T. Gucker, Jr. 2312
Spectral Apparatus, New, to Obtain Highest Spectral Purity for Region 200 $\mu\mu$ to Beyond 800 $\mu\mu$. C. Leiss 1851
Spectroheliscope. G. E. Hale 536
Spectro-Micropyrometer and Optical Observation of Melting-points of Pt and Other Metals. F. Henning and W. Heuse 598
Spherical Triangles, Straight Line Chart for Solution of. F. E. Wright 464
Spherometer, Modified. H. S. Rowell 735
Stereoscopic Micro-radiography in Relief and Pseudo-Relief. P. Goby 1627
Stethoscope, Electrical. H. A. Frederick and H. F. Dodge 629
String Galvanometer Oscillograph with Automatic Photography. A. Trowbridge 419
Sun-Clock. F. Hope-Jones 2246
Superheated Steam at High Pressures, Total Heat of. New Method of Measurement, including Latent Heat. H. L. Callendar 2540
Surface Tension, Apparatus for Rapid Measurement of, at Surface of Separation of Two Liquids. P. L. de Noüy 2003
Syntoniser, Continuous Wave. H. L. Crowther 1205
Telemeter, Stereoscopic 1343
Telescope especially adapted to Spectrometers, New Type of. C. S. Hastings 2475
,, , Anallatic Internal Focusing. E. W. Taylor 331
,, , Power of. H. Moeller 2472
Temperature Indicator Tester. D. Lewis 593
Theodolite with Distance-measuring Attachment. E. Hammer 2255
,, , Zeiss, Latest Form of. W. Schermerhorn 1061
Thermionic Tubes, Calculation of. C. Matteini 217
,, ,, , High Vacua for. G. Montefinale 216
Thermofunction Galvanometer System, Calibration for. Abadie 2154
Thermo-Microphone, Investigation of. A. v. Hippel 1932
,, , Theory of. A. v. Hippel 1931
Thermometers, Resistance, Theory of. J. Friese and E. Waetzmann 1136
,, , *see also* section Thermometry.
Thermostats for Very High Temperatures. L. H. Adams 389
,, , Mechanical. J. R. Roebuck 2309
Time Signals, Accurate, F. Marre 2452
Transference Numbers, Moving Boundary Method for Determining. Novel Form of Apparatus. D. A. MacInnes and T. B. Brighton 1773
Transition-points, Apparatus for Viscosimetric Determination of. N. H. Hartshorne 245
Ultra-Centrifuge, New Instrument for Determination of Size and Distribution of Size of Particles in Amicroscopic Colloids. T. Svedberg and H. Rinde 1237
Valve Ohmmeter. S. Loewe and W. Kunze 1485

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Apparatus and Instruments, *continued.*

Valve Oscillator, Push-Pull. D. C. Prince and F. B. Vogdes 214
Valves, Transmitting, Characteristics (Reissdiagramme) of. H. Rukop 649
Vector-Trolley Apparatus. Principles and Problems of Vector Combination Demonstrated. E. J. Atkinson 2408
Vibration Camera, Simple Form of. W. H. George 547
Voss Machine, Four-Carrier, Quantitative Analysis of. A. W. Simon..... 1167
Wavemeter: Absolute Frequency of Electric Vibrations. E. Giebe and E. Alberti 1969
,, , Standard Harmonic, Self-contained. D. W. Dye 670
X-Ray Apparatus, Simple, for Investigation of Crystals. H. Lange 1911
,, Generating Outfits, Oil-immersed, and their Uses. W. D. Coolidge .. 877
,, Spectrograph, Design of Cam for. J. B. Friauf 2675
,, ,, , Universal. A. Müller 2513
,, Spectrometer, New Precision. W. Soller 76
,, Spectrometers, Precision. J. C. Hudson 75
,, Tube Development, Modern. W. D. Coolidge 1910
,, ,, , New Shielded. Fauconnier 1113

Astronomy

Aberration. R. Tomaschek 2024
Absolute Magnitudes and Parallaxes of 1105 Stars. R. K. Young and W. E. Harper 1847
Ages and Masses of Stars. J. H. Jeans 496
A Stars, Relation of Hydrogen Line-Widths to Absolute Magnitude for. Priscilla Fairfield 1591
Asteriod, New Classes of Secular Solutions in Problem of Three Bodies applied to Motion of. W. W. Heinrich 2057
Asteroids at Yerkes Observatory, Observations of. G. van Biesbroeck and O. Struve 508
,, , Observations of. G. H. Peters 57
,, , Variations in Light of. Margaret Harwood 2035
Astronomical Objective, Study of. G. Demetrescu..... 1057
Atmospheric Electricity and Solar Activity, Correlations between. L. A. Bauer 1169
Auroral Spectrum, Problems of. J. C. McLennan and G. M. Shrum 2287
Band Spectra of Carbon, Influence of Pressure on. Consequences for Theory of Comets. F. Baldet 1708
B.D. — 15°·6169 by Mars, Occultation of. S. D. Tscherny..... 61
Binary 66 Eridani, Spectroscopic, Orbit of. E. B. Frost and O. Struve 1029
,, Stars, Spectroscopic, Third Catalogue of. J. H. Moore 1028
,, Systems, Effect of Varying Mass on. E. W. Brown 2050
Calcium Chromosphere, Equilibrium of. E. A. Milne..... 1034
Cassiopeia, Remarkable Planetary Nebula in. J. H. Reynolds 64
Celestial Spectra, Continuous Hydrogen Radiation in. J. W. Nicholson..... 1387
Class Be Stars, Discovery and Observations of. P. W. Merrill, M. L. Humason and C. G. Burwell 2654
Cometary Orbits, Legendre's Theorem on Determination of. T. Banachiewicz 1600
Comets, Formation of, by Passage of Star through Nebula. E. Belot..... 2040
Comet's Tails, Spectrum of. F. Baldet 1608
Convection Currents in Stars. C. E. St. John and W. S. Adams 498
Corona, Measurement of Intensity of Light of, at Eclipse of September 21, 1922. G. H. Briggs 1040
Cosmic Dust in Solar Corona. W. Anderson 310
,, Phenomena; Light from Solidified Gases. L. Vegard 66
Cosmical Velocities, General Distribution of. G. Strömberg 2054
Cosmogonic Time-Scale and Binary Stars. W. M. Smart 1606
Cosmogony of Systems of Decreasing Mass. J. H. Jeans 1025
P Cygni Type, Two Stellar Spectra of. P. W. Merrill 2649
σ Cygni. F. Henroteau..... 499
Dissociative Equilibrium in an External Field of Force. E. A. Milne 1610
Distributions, Globular, Study of Properties of. S. D. Wicksell 777
Dominion Astrophysical Observatory, Victoria, B.C. J. S. Plaskett..... 72
Double Stars, Mass Ratios in. G. Shajn 1603
Durchmusterung, Harvard-Groningen, Reduction of, to International System of Magnitude and Colour. F. H. Seares, Mary C. Joyner and Myrtle L. Richmond 2051

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Astronomy, *continued.*
Earth, Figure of, and Mean Motions of Moon's Perigee and Node. H. S. Jones 809
Earthlight, Photographic Measures of. E. S. King 1042
Effective Temperatures of Stars, Spectrophotometric Measurements of. R. A. Sampson 1604
Emission-Line Stars, Scattering and Absorption in Atmospheres of. M. C. Johnson 1032
Ether-Drag and Astronomical Aberration. E. Brylinski 484
,, Drift. F. Zerner 2240
,, -Drift Experiments at Mount Wilson. D. C. Miller 2438
Evolution of Stars and Diameter of Sun. M. Hamy 497
Faint Stars of Appreciable Proper Motion. H. L. Alden and P. van de Kamp 56
Fluid Celestial Body round its Centre of Gravity, Movement of. P. Appell 311
,, Planets and Rotation of Inner Planets, Eccentricity of. J. Boccardi 2059
Fraunhofer Lines, Width of. J. Q. Stewart 2456
,, ,, , ,, . Reply to J. Q. Stewart. E. A. Milne 2457
Gemini, New Variable Star in. A. S. Williams 52
Giant Stars in Smaller Magellanic Cloud, Luminosity Curve for. H. Shapley 507
Globular Clusters and Non-Galactic Nebulæ, Analysis of Radial Velocities of. G. Strömberg 2657
Gravitation, Influence of, on Light Rays, *see also* section Gravity.
Henry Draper Extension. Annie J. Cannon 2652
W Hydræ, Long-Period Variable. I. Yamamoto and L. Campbell 1590
Hydrogen in Star, Distribution of. S. Rosseland 2037
Jungfrau, Astronomy of. F. W. Dyson 71
Jupiter, Polarisation of Light from. B. Lyot 60
Kernels of Ten Electrons of Na, Mg, Al, and Si derived from the Homologous Spectra. L. A. Turner 67
Lake Level in Relation to Rainfall and Sunspots. F. Dixey 307
Latitude and Time, New Instrument for Determining. E. Paloque 511
Luminosities and Parallaxes of 525 Stars, Types Fo to Mb. W. B. Rimmer 1033
Luminosity Curve, Recent Work on. W. J. Luyten 1041
,, Distribution Law. W. J. Luyten 2655
Lunar Eclipse of 14 August, 1924: Observations made at Lyons Observatory. J. Guillaume and (Miss) Bloch 59
,, Phenomena and Gravity. F. Sacco 313
,, Surface, Bright Halos observed on. Jarry-Desloges 1598
Magellanic Cloud, Large ,Absolute Magnitudes of Objects in. H. Shapley and H. H. Wilson 2045
,, ,, , ,, , Distance and Linear Dimensions of. H. Shapley 1026
Magnitude Scales, Relations between. F. H. Seares 2052
Mars in 1924, Observations of. T. E. R. Phillips 1048
,, ,, , Radiometric Determination of Temperature of. W. W. Coblentz 2659
,, , Changes observed on. E. M. Antoniadi 62
,, , Observations of Remarkable Cloudy Protuberances recently appearing on. F. Baldet and E. M. Antoniadi 513
,, , Retarded Diminution of Circumpolar Snows of. E. M. Antoniadi 63
,, , Variations in the Polarisation of Light from, due to Clouds. B. Lyot 2060
Mass and Energy and Stellar Evolution, Relativity Relation between. E. Condon 1601
,, -Luminosity Law. J. H. Jeans 1599
,, ,, Relation. A. S. Eddington 2039
,, ,, ,, . J. H. Jeans 2455
Mean Absolute Magnitudes from Apparent Magnitudes, Proper Motions and Linear Radial Velocities, Calculation of. W. J. Luyten 1602
,, Colour-Index of Stars of Different Apparent Magnitudes. F. H. Seares 1609
,, Parallax to Proper Motion and Apparent Magnitude, Relation of. Gorakh Prasad 1035
Means by Tenth-Years in Latitude Variation. J. Boccardi 509
Measured Parallaxes and Parallaxes Themselves, Frequency Distribution of some. E. B. Wilson and W. J. Luyten 2049
Meteors, *see* Meteorology.
Milky Way Stars, Faint, Effective Wave-lengths of. J. H. Petersson 2648
,, ,, ,, , ,, , in Aquila, Spectral Classification of. C. Schalén 2647
Minor Planet Alger N = 1924 QL, Elements of. B. Jekhowsky 65

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Astronomy, *continued*.

Minor Planet YO11, Elements and Opposition Ephemeris of. A. D. Maxwell 1045
Moon, Luminous Intensity of, during Total Eclipse of August 14, 1924. G. Armellini-Conti and G. Armellini 1047
Moon's Motion from Occultations from 1880 to 1922, Corrections to. H. S. Jones 1046
Moving Light-Source, Effect of, *see* section Rays and Radiation.
M Stars, Brighter Class, Statistical Study of. W. J. Luyten 1592
Nebulæ, Spiral, Distances and Structure of. J. H. Jeans 2041
Object Baade, Preliminary Elements and Ephemeris of. A. O. Leuschner ... 1043
Occultation of B.D.—18°·6078 by Mars. S. D. Tscherny 1036
Occultations observed in 1923 and Comparison with Brown's Tables 2046
Open Star Clusters, Absorption of Light in. P. ten Bruggencate 510
O Stars, Spectra of. Cecilia H. Payne 1030
O-Type Stars. F. J. M. Stratton 53
,, ,, and their Relation to Stellar Evolutionary Sequence. J. S. Plaskett 504
,, ,, , Motions, Mean Distance and Luminosities of. R. E. Wilson.. 505
Ozone as Absorbing Material for Radiation. C. Fabry 1589
Parabolic Orbits, Newton's Method of Determining. A. N. Kriloff 2058
Parallaxes of Fifty Stars. C. P. Olivier 493
,, , Mean, of Stars of Small Proper Motion. F. H. Seares 494
ϕ Persei (Type BO*pe*), Spectrum of. W. J. S. Lockyer 2047
Perturbation and Perihelion Formula, Theory of. A. Wintner 2656
Perturbations, Two Methods of Calculation available in Quantum Theory for Calculation of. J. Woltjer, Jr. 1310
Photosphere, Perspective Shortening in Spectroheliograms and Transparency of. W. H. Julius 312
Photospheric Layers, External, Radiation and Temperature of. J. Spijkerboer 70
Planetarium, Optical, at Munich 512
Planetary Radiation and Planetary Temperatures, Measurements of Spectral Components of. W. W. Coblentz and C. O. Lampland 2245
,, Time and Einstein's Theory. H. Reichenbach 2439
Planets, Characteristic, Periodic Orbits for. L. A. Hopkins 514
Pleiades, Absolute Magnitudes of Stars in. H. Kienle 1586
,, , ,, ,, ,, . H. Kienle and P. ten Bruggencate 55
,, , ,, ,, ,, : Remarks on Investigation of Kienle and ten Bruggencate. W. Baade..... 1585
,, , Photometric Sequence in. H. L. Alden and S. A. Mitchell..... 2053
Polarisation of Light from Sky and Sun's Altitude. J. J. Tichanowsky..... 544
Positions and Proper Motions of Stars from a Great Number of Catalogues, New Method for Determining. J. E. de V. van Steenwijk 1594
Pressure Relations in a Gaseous Star, Effect of Electrical State on. S. Rosseland 54
Proper Motion, Investigations of. 11th Paper. Messier 13. A. van Maanen 1595
,, Motions in Latitude of Sunspots and Faculæ 1038
,, ,, of Stars, Determination of, from 5th to 16th Magnitude, photographed on First Plates taken by Brothers Henry. V. Nechvile 2646
Radiation-Pressure, *see also* section Rays.
Radiative Equilibrium of a Double-Star System. H. v. Zeipel 51
,, ,, of a Rotating System of Gaseous Masses. H. v. Zeipel 49
,, ,, of a Slightly Oblate Rotating Star. H. v. Zeipel..... 50
,, ,, of Star with Central Source of Energy. A. S. Eddington 2043
,, ,, , Theorem of v. Zeipel on. J. H. Jeans 2042
,, ,, , ,, ,, . H. v. Zeipel 2454
Resisting Medium, Study of Action of. Application to Formation of Planetary Orbits. A. Véronnet 1597
Rotating Stars, Circulating Currents in. A. S. Eddington 1605
Saturn and its Rings, Polarisation of Light from. B. Lyot 1044
Saturn's Ring, Ellipticity of. G. R. Goldsbrough 314
Signals, Hourly, Emitted, Registered, or observed by B.I.H., Corrections of. G. Bigourdan..... 1024
61 μ Orionis. E. B. Frost and O. Struve 503
Solar Constant, *see also* section Meteorology.
,, ,, and Solar Activity. I. Yamamoto 1037
,, ,, and Terrestrial Magnetism, Relationship between. C Chree.. 2603

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Astronomy, *continued.*

Solar Corona, Physical Nature of. W. Anderson 2247
,, Motion derived from Proper Motions of Tenth Magnitude Stars. H. L. Alden and P. van de Kamp 506
,, Observations made at Lyons Observatory in First Quarter of 1924. J. Guillaume 73
,, Radiation Intensity, Total, Records of, and their Relation to Daylight Intensity. H. H. Kimball 489
,, Rotation at Different Levels in Chromosphere, Measures of. J. Evershed 2034
,, Surface, Observations of Masses of Absorbing Vapour at Great Heights above. L. d'Azambuja 1039
,, System, Origin of, and Eddington's Theory of Stellar Luminosity. H. Jeffreys 2044
Space-Time, Curvature Radius of. L. Silberstein 1590
Spectroscopic Binaries of Short Period, Nature of. O. Struve 501
,, ,, , Corrections to List of. H. H. Plaskett 500
,, Binary 43θ^2 Orionis, Orbit of. O. Struve 502
,, ,, Star Mizar, Measurement of, with Interferometer. F. G. Pease 2056
Spiral Nebulæ, Condensations in. J. H. Reynolds 1587
,, ,, , Gravitational Forces in. E. W. Brown 1588
Star-cluster ICN 4996. W. Gyllenberg 2243
,, M 35, Proper Motion of. W. M. Smart 1593
,, , Messier 11. R. J. Trumpler 1846
Star Disc, Distribution of Brightness on. M. Maggini 69
Stars, Masses, Luminosities and Surface Temperatures of. J. H. Jeans 2038
,, , Physical Condition of. A. Brill 1845
,, , with Respect to Magnitude and Galactic Latitude, Distribution of. F. H. Seares and P. J. van Rhijn 2055
Statistical Distribution of Mass among the Stars. E. B. Wilson and W. J. Luyten 495
Stellar Absorption Coefficient. E. A. Milne 2459
,, ,, ,, , Theory of. S. Rosseland 2650
,, and Planetary Temperatures, Radiometric Measurements of. W. W. Coblentz 2453
,, Distribution in Space. K. G. Malmquist 2242
,, Evolution, Problem of. H. N. Russell 2244
,, Magnitude Scales of Astrographic Catalogue. Provisional General Survey. H. H. Turner 2048
,, Motions as determined from Radial Velocities, Asymmetry in. G. Strömberg 2653
,, Photospheric Layers, Absorption Coefficients and Radiation-Pressure in. E. A. Milne 2458
,, Plates, Refraction Effects on, due to Long Exposures. W. M. Smart.. 2651
,, Radial Velocities, Determination of. M. Hamy 1596
,, Spectra, Line-Intensities in. D. H. Menzel 1584
,, -Spectrophotometry. J. Baillaud 1027
Sun-Clock. F. Hope-Jones 2246
Sunspots and Frequency of Tropical Cyclones. S. S. Visher 304
,, , Proper Motion of. R. Sekiguti, S. Itiki and T. Taguti 2660
Three Bodies, Types of Periodic Solutions of Problem of. W. W. Heinrich... 1049
Time and its Measurement. K. Vogtherr 794
,, Service of the Paris Observatory. G. Bigourdan 243
,, Signals, Accurate. F. Marre 2452
Ultimate and Penultimate Lines of Astrophysical Interest, List of. H. N. Russell 2080
Variable Stars and Ballistic Theory. C. Nordmann and C. le Morvan 2036
,, ,, , Ballistic Theory of. M. la Rosa 2241
,, ,, , Colour Variation of Amplitude in. la Rosa 1607
,, ,, , Fifty-nine New. Annie J. Cannon 1031
Venus, Naked-Eye Observations of. H. H. Turner 58
Vortex Motion in Resisting Medium with Application to Planetary Vortices. E. Belot 993

Batteries, Primary.

Activity Coefficients. E. Wilke and O. Kieninger 2631
Alkaline Earth Chlorides, Activity Coefficients and Transference Numbers of. W. W. Lucasse 1771

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Batteries, Primary, *continued.*
Calomel Electrode, Preparation of Electrolytic Mercurous Chloride in Saturated Potassium Chloride for Use in. W. W. Ewing 1529
Contact Electricity, Studies in. Charge of Metals with Respect to Dielectrics. A. Cohen and A. Curs 456
Electric Equilibrium at Surfaces of Metals in Contact. E. H. Hall..... 1725
Electrolytes, Strong, Activities of. G. Scatchard 1770
Galvanic Cell, Seat of E.M.F. in. J. A. V. Butler 458
,, Cells, Application of Phase Rule to. J. A. Beattie 457
,, ,, , Electrodes, Contact, and Electro-kinetic Potential of. J. Heyrovský 1769
Leclanché Cell and its Suitability for Pocket-Lamp Batteries. M. Gruhl 2188
Photoelectric Cells, *see* section Photoelectricity.
Photovoltaic Elements with a Fluorescent Liquid, Surface Phenomena in. A. Grumbach 1772
Polarisation, *see also* section Polarisation (Electrolytic).
Selenium, Change of Conductance of, due to Electronic Bombardment. R. de L. Kronig 653
,, , Photoelectric Emission from. W. del Regno 664
Solvation, Electrode Potentials and Free Energy of. J. Heyrovský 1994
Thermocurrents in Electrolytes. J. Thièle 1777
Thermodynamics of Solutions of Certain Simple Electrolytes. H. S. Harned. 2406
Three and Four-electrode Valves, some applications of, to Photoelectric Cells. G. Ferrié 1733
Unsaturated Weston Cells, Decrease in Electromotive Force of. W. C. Vosburgh 2630
Zinc-Sulphuric Acid-Carbon Cell, Effect of Superposed Alternating Current on. Part I. Low-frequency Currents. A J. Allmand and V. S. Puri 1262

Batteries, Secondary.
Accumulators, Industrial Electrical, *see* section B.
Non-Sulphating Accumulator, Transportable. E. Reynaud-Bonin 714

Capacity (Electrostatic).
Capacities and High Resistances by Neon Lamp, Comparison of. J. Taylor, W. Clarkson and W. Stephenson 1732
,, , Comparison of, by Means of Triode. K. Gorbatscheff 400
Dielectrics, General Law of Electrical Conduction in. S. W. Richardson 1163
Disperse Systems, Mathematical Treatment of Electric Conductivity and Capacity of. H. Fricke 651
Electric Current considered as Circulation of Equal Charges of Opposite Sign. F. Guéry 917
Electrical Charge on Earth's Surface. C. Ramsauer 635
,, Constants of Dielectrics for Radio-frequency Currents. R. V. Guthrie, Jr. 667
Elementary Charge E from Measurements of Shot-Effect, Determination of. A. W. Hull and N. H. Williams 1458
Filtration, Electromotive Force of. L. Riéty 2632
Frictional Electricity, Anomaly in. A. O. Rankine 178
Hertzian Waves in Solids near Point of Fusion, Dispersion of. J. Errera.... 918
Ice, Absorption of Electromagnetic Waves by. J. Granier 915
Inductance and Capacity, Method of Comparing. T. B. Vinycomb 2596
Induction Coil, Effect of Capacity on. J. A. Crowther and R. J. Stephenson 1974
Liquid-gas Interface, Electrical Charges at. H. W. Gilbert and P. E. Shaw.. 2133
,, Good Conductors, Dielectric Constants of. R. Fürth 1161
Measurements, *see* separate section.
Mercury against its Ions in Aqueous (1) Methyl Alcohol, (2) Acetone, and (3) Pyridine, Electrode Potential of. J. Ghosh, P. R. Chaudhuri and A. Sen. 1480
Mica Condenser, Variable. H. G. Dorsey 179
Millikan Condenser, Measurements in. Y. C. Yang 1446
Permanent Electret. M. Eguchi 1165
Residual Charge, Variation of, and Ratio of Electrical Conductivity to Capacity due to Temperature. H. Saegusa 916
Rochelle Salt Crystals, Dielectric Anomalies in. J. Valasek 666
Schrot-Effect, Theory of. T. C. Fry 1460

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Capacity (Electrostatic), *continued.*
Solids of Revolution, Certain, Electric Capacity of. D. M. Wrinch 2132
Specific Inductive Capacity of Ice. B. de Lenaizan and J. Granier 1164
Sub-Electron Question, Mathematical Statistical Investigation of. H. Daecke 788
Two Spheres, Electrostatic Capacity of, when Touching one another. A. Russell 2562

Chemical Equilibrium and Reactions.
Acid Solutions of Low Concentration on Ferrous Metals, Action of. R. Girard 2792
Affinity. T. de Donder 2183
Alkaline Metals by Iron, Displacement of. L Hackspill and R. Grandadam.. 1255
Ammonia, Carbon, Hydrogen Cyanide, Hydrogen Equilibrium, and Free Energy of Hydrogen Cyanide. R. M. Badger 447
,, , Explosion of, with Electrolytic Gas ($2H_2 + O_2$) and with Oxygen. J. R. Partington and A. J. Prince 451
,, , Formation of, in Oxy-Hydrogen Flame containing Nitrogen. H. Tominaga 706
Barium and Strontium, Very Pure, Preparation of. P. S. Danner 707
Bimolecular Reactions in Solutions, Velocity of. J. A. Christiansen 448
Blasting Charges in an Inflammable Atmosphere, Safe Firing of. E. Audibert 453
Briquetting and Fritting of Metallic Oxides and Adhesive Forces between Oxide Surfaces. F. Sauerwald and G. Elsner 1506
Calcium Sulphate Cements, Mechanism of Setting of. C. L. Haddon 1258
Carbon Dioxide and Hydrogen on Surface of Tungsten, Interaction of. C. N. Hinshelwood and C. R. Prichard 2398
,, ,, ,, , Interaction of, in Corona due to High-frequency Alternating Currents. R. W. Lunt 1992
Carbonic Acid in Dilute Solutions of Calcium Hydrogen Carbonate or in Hard Tap-Waters. E. M. Crowther and W. S. Martin 455
Catalysis, Heterogeneous. W. E. Garner 970
,, , Studies in. H. W. Underwood, Jr. 1524
Catalysts, Physical State of. R. C. Smith 2790
Catalytic Action of Platinum Black, Inhibition of. M. C. Boswell and C. H. Bayley 1260
,, Activity, Effect of Poisonous Substances and Mixed Vapours on. F. H. Constable 2396
,, Decomposition, Mechanism of. F. H. Constable 2395
,, Surface, Theory of. H. S. Taylor 1768
Chemical Change, Effect of Diffusion on Time-Rate of. S. Sano 1516
,, Constants and Frequencies of the Elements, Numerical Values of A. C. Egerton 1505
,, Equilibrium between Different Stages of Oxidation (Manganese in Phosphoric Acid) by Electromotive Force Measurements, Estimation of. G. Grube and M. Staesche 2399
,, Reaction, Mechanism of. R. C. Tolman 2181
,, Reactions in Compressors, Production of. M. Brutzkus 1518
,, ,, , Critical Increment of. W. E. Garner 1517
,, ,, , Note on Garner's Paper on Critical Increment of. C. N. Hinshelwood 2392
Chlorine, Photo-activation of. W. Taylor 2182
Coal-Dust Explosions at Mines Department Experimental Station at Eskmeals. H. B. Dixon 235
Coke, Reactivity of. J. P. Arend and J. Wagner 443
Colours, Stains and Dyes. J. F. Thorpe 1523
Combustion of Standard Substances, Heat of. W. Jaeger and H. v. Steinwehr 967
Complex Compounds in Solution and their Stability, Spectrographic Study of Formation of. P. Job 1762
Condensed Ternary System: Phenol-Water-Salicylic Acid. C. R. Bailey.... 2789
Contact Catalysis, Third Report of Committee on. H. S. Taylor 454
Contraction Constants and Affinity of Solid Compounds. A. Balandin 2184
Cupferron, Salts of. (Miss) V. Auger, L. Lafontaine and C. Caspar..... 1521
Cyanides, du Pont Process for Manufacture of. H. G. Chickering 1256
Decomposition Potentials of Solutions of Metal Bromides in Molten Aluminium Bromide. W. Isbekow 2379
Dibasic Acids, Photolysis of. Volmar 1859
Electric Field of Ions and Neutral Salt Action. P. Debye and J. McAulay .. 1527

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Chemical Equilibrium and Reactions, *continued.*

Equilibria in Systems in which Phases are separated by a Semi-permeable Membrane. I and II. F. A. H. Schreinemakers 1539
Equilibrium Principle of G. N. Lewis. M. Leontowicz 2390
,, , New Principle of. G. N. Lewis 1766
Explosion, Spark Photography as Means of Measuring Rate of. J. E. Smith 2131
Explosives, Development and Application of Initiating. B. Grotta 1520
Films of Platinum and Nickel and Catalytic Activity. A. W. Gauger 2793
Flames, Non-Luminous, Radiation from. R. T. Haslam, W. G. Lovell and R. D. Hunneman 1927
Gas Ignition by Electric Sparks, Thermal Theory of. J. D. Morgan 1468
Gaseous Combustion at High Pressures. Part V. The Explosion of Hydrogen-Air and Carbon Monoxide-Air Mixtures at Initial Pressures up to 175 Atmospheres. W. A. Bone, D. M. Newitt and D. T. A. Townend 2403
Glycols with Acetone, Reactions of. Space Configuration of Organic Molecules. P. H. Hermans 708
Gold in Mercury, Estimation of. H. Stammreich 1508
Heat of Reaction, Dissipation of. M. Born and J. Franck 1253
Homogeneous to Catalysed Reactions, Relation of. Catalytic Decomposition of Hydrogen Iodide on Surface of Gold. C. N. Hinshelwood and C. R. Prichard 2397
Hydrocarbons, Aromatic, Electro-Chemical Oxidation of. F. Fichter 962
Hydrocyanic Acid, Catalytic Oxidation of. R. Hara and H. Sinozaki 2788
Hydrogen and Oxygen, Union of, in Presence of Silver and Gold. D. L. Chapman, J. E. Ramsbottom and C. G. Trotman 1254
,, Peroxide, Catalytic Decomposition of, in Acid Chlorine-Chloride Solution. R. S. Livingstone and W. C. Bray 2791
,, ,, Decomposition of, in Presence of Nickelous Hydroxide. Suzanne Veil 1767
,, , Activation of, by excited Mercury Atoms. A. C. G. Mitchell 2787
,, , Behaviour of, in High-frequency Corona Discharge. R. W. Lunt .. 1993
Ignition of Gases. III. Ignition by Impulsive Directive Discharge. Mixtures of Paraffins with Air. R. V. Wheeler and S. C. Lind 233
,, ,, . IV. Ignition by a Heated Surface. Paraffin Air Mixtures. W. Mason and R. V. Wheeler 234
Inelastic Atomic and Molecular Impact: Review Lectures on Theme. M. Bodenstein, J. Franck 2389
Lead Carbonate, Dissociation of. M. Centnerszwer, G. Falk and A. Awerbuch 1522
Magnetic Field on Certain Chemical Reactions, Influence of. M. A. Parker and H. P. Armes 1257
Magnetite into Hematite, Two-Stage Transformation of. L. A. Welo and O. Baudisch 2393
Mercury Complexes, Spectrographic Study of. P. Job 2385
Mining Explosives in an Inflammable Atmosphere, Condition for Ensuring Safety with. E. Audibert 452
Negative and Positive Catalysis and Activation of Molecules. N. R. Dhar ... 230
Nephelometry and Suggested Sensitive Test for Stability of Explosives, Some Notes on. A. F. C. Pollard 2069
Neutralisation, Refractometric Studies of. F. S. Hammett 1519
Nitric Acid on Metals, Action of. N. R. Dhar 1514
Nitrogen as Sodium Cyanide, Mechanism of Fixation of. E. W. Guernsey and M. S. Sherman 2626
Oppau Ammonium Sulphate-Nitrate, Investigation on. R. Threlfall, R. Robertson, H. H. Thomas, A. F. Hallimond, W. Bragg and G. Rotter .. 231
Organic Acids, Study of Displacement of, from their Sodium Salts by Conductivity Measurements. J. Bureau 2402
,, Electrochemistry, Applied, Present Status of. C. J. Thatcher 1534
Oxidation Potentials. S. R. Carter and F. H. Clews 446
,, , Heats of. J. E. Moose and S. W. Parr 963
Oxidising Catalysts, so-called Poisoning of. C. Moureu and C. Dufraisse 1259
Ozone in Incandescent Capillaries, Formation of. E. H. Riesenfeld 2625
,, , Action of Certain Reagents upon. L. I. Smith 2401
,, , Production of, by Silent Discharges at Low Pressures. E. Warburg and W. Rump 2186
Ozoniser, Laboratory, yielding High Concentrations of Ozone. L. I. Smith ... 2400

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Chemical Equilibrium and Reactions, *continued.*

Passivity. H. Gerding and A. Karssen 1989
,, of Metals, Electronic Theory of. U. Sborgi 1990, 1991
Peroxides and Peracids in Electro-Chemical Oxidation of Organic Compounds. F. Fichter 964
Phosphorus, Glow of. (Lord) Rayleigh 704
Photochemical Reaction between Hydrogen and Chlorine, Mechanism of. A. L. Marshall 2394
*p*H, Spectro-Photometric Measurement of. F. Vlès 1513
Platinum and Iridium, Quantitative Separation of. S. Aoyama 445
Pure Alloys, Preparation of. R. F. Mehl 2785
Radon, Chemical Action produced by. S. C. Lind and D. C. Bardwell 136
Reaction Rate, Theory of. G. N. Lewis and D. F. Smith 2180
,, Velocity in Solutions, Investigation of Temperature Dependence of. C. Wagner 1765
Salt Solution, Mixed, Equilibrium State of. N. Sasaki 2185
Selenium Hydrosol and other Hydrosols, Conditions of Precipitation by Electrolytes of. J. J. Doolan 1533
Siemen's Tubes, Theory of Chemical Action in. E. Warburg 2187
Silver, Separation of, from Silver Halides by Intensive Lighting. P. P. Koch and H. Vogler 2686
Solid Phases, Reactivity of. J. A. Hedvall 710
Solution, Heats of, and Heats of Incomplete Reaction. (Miss) Bérenger and A. Tian 2320
Spark Discharge, Electric, Actinic Action of. F. Berger 1944
Specific Affinity, Calculation of. T. de Donder 2391
Speed of Flame, Influence of Nitrogen Dilution on. Parts I and II. C. Campbell, O. C. de C. Ellis and S. R. Stubbs 232
Substituents on Chemical and Physical Properties, Influence of. H. G. Rule and T. R. Paterson 442
Synthesis of Hydrogen Bromide by Capacity Change, Measurements of Velocity of. A. Bramley 2404
Temperature Coefficient and Mechanism of Chemical Reaction, Relation between. F. O. Rice, C. F. Fryling and W. A. Wesolowski 449
Vaporisation and Chemical Changes on the Surface of Contact of Two Fluids, Time-Rates of. S. Sano 1515
Water, Influence of, on Certain Chemical Reactions. L. B. Parsons..... 2629
Wood's Active Hydrogen. K. F. Bonhoeffer 709
Zinc-Sulphate-Water System, Equilibria in. E. Cohen and A. L. T. Moesveld 2782

Conductivity (Electric) **and Resistivity.**

Alloys containing Mixed Crystals, Conduction of Electricity in. G. Borelius.. 2351
Aluminium Alloys, Thermal and Electrical Conductivities of. H. Masumoto.. 939R
Capacities and High Resistance by Neon Lamp, Comparison of. J. Taylor, W. Clarkson and W. Stephenson 1732
Conducting and Non-Conducting Mixtures, Analogy in Behaviour of. K. Lichtenecker 1193
Conductivity of Atmosphere, *see also* section Static Electricity.
,, of Gases, *see* section Discharge in Gases.
Contact Resistance. R. Holm 1727
Copper, Effects of Certain Elements on Electrical Resistivity of. A. L. Norbury 2352
,, , Effects of Iron on. D. Hanson and (Miss) G. W. Ford 757
Crystal Rectification of Alternating Currents. A. C. James 1962
Cupro-Nickel, Reversible Anomaly of, in Domain of Paramagnetic State. P. Chevenard 2365
Disperse Systems, Experimental Study of Electrical Conductivity of. H. Fricke and S. Morse 1474
,, ,, , Mathematical Treatment of Electric Conductivity and Capacity of. H. Fricke 651
Electrolytic Iron and its Alloys melted *in vacuo* and rolled into Sheet, Magnetic and Electric Properties of. M. Fukuda..... 417
,, Resistances, Temperature Coefficients of. J. Malsch and M. Wien 657
Flames, Galvanomagnetic Phenomena in. C. W. Heaps 1201
Galvanomagnetic and Thermomagnetic Phenomena, Four Transverse, Connections between. P. W. Bridgman 1200
Hall and Corbino Effects. C. Bellia 201

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Conductivity (Electric) **and Resistivity,** *continued.*

Hall Effect in a Conductor due to its own Magnetic Field. W. van B. Roberts 655
,, ,, of Photoelectric Primary Current in Non-conducting Crystals. H. Lenz 202
,, ,, ,, Electron Theory of. L. Page, with Note by J. A. Eldridge 203
,, ,, , New Experiment upon. G. Polvani 930
Halogen Hydracids in Methyl and Ethyl Alcohol, Conductivity and Catalytic Action of. H. Goldschmidt and P. Dahll 931
Heated Gas, Electrical Conductivity of. R. N. Ghosh 1963
Ice, Absorption of Electromagnetic Waves by. J. Granier 915
Invar, Anomaly of Dilatation of. C. Benedicks and P. Sederholm 2589
Ionisation, *see* sections Dissociation and Ionisation and Discharge, Electric.
Krarup Conductors, Measurements in. U. Meyer 938
,, Lines, Properties of. W. Meyer 1484B
Liquid Metals and Alloys, Effect of Magnetic Field on Electrical Resistance of. E. J. Williams 2148
Marble, Conductivity of. G. Stetter 415
Measurements, *see* separate section.
Mercury in Magnetic Fields, Electrical Resistance of. T. J. Jones 2149
Metallic Aggregates, Electrical Conductivity of. I. Runge 1475
,, ,, , ,, Resistances of. W. Esmarch 656
,, Conduction and Scattering of Electrons by Atoms, Kinetic Theory of. E. L. Davies and G. H. Livens 1724
,, Resistance, Variation of, with Temperature. K. Lichtenecker 654
Metals of Great Purity, Electrical Measurements on. W. Geiss and J. A. M. v. Liempt 2179
,, , Significance of Gas Contents of, for some Electric Phenomena. A. Janitzky 1482
Network, Electric Currents in. P. Franklin 1940
Nickel Depositing Solutions, Conductivity of. L. D. Hammond 980
,, Layers, Thin, Galvanic Conductivity and Hall-Effect of. A. Riede ... 416
Organic Liquids, Electrical Resistance of Thin Films of. S. S. Bhatnagar, M. Prasad, N. G. Mitra and D. L. Shrivastava 2752
Photoelectric Emission and Electric Conductivity of Platinum, Effect of Gas Absorption on. K. Herrmann 2572
Platinum and Iron Wire in High Vacuum, Resistance Changes of, in Relation to their Gas Content. H. Kleine 2353
Potassium Iodide in Bromine-Iodine Solutions, Electrical Conductivity of. W. Plotnikoff 2189
Rectification of Alternating Current by Means of Hall-Effect. R. Sarek 1490
Resistance Boxes, etc., Design of Electrical Contacts for. G. Barlow and H. B. Keene 1735
,, in Terms of Mutual Inductance, Determination of. A. Campbell .. 1731
Rock-salt Crystals, Electrical Conductivity of. D. v. Seelen 200
Selenium due to Electronic Bombardment, Change of Conductance of. R. de L. Kronig 653
" Silit " Resistances at High Frequencies, Investigation of. E. Alberti and A. Güntherschulze 1476
Simple Compounds and Different Varieties of Solid State, New Properties of. E. Friederich 1811
Solid Metals, Kinetic Studies of. Decay of Al_2Zn_3. W. Fraenkel and W. Goez 1246
Solid Salts, Law of Variation of Conductivity of, with Temperature. P. Vaillant 1194
Specific Resistance and Magnetic Properties of Steel. E. D. Campbell and G. W. Whitney 334B
Sputtered Platinum Films, Effects of Gas upon Resistance and Resistance-Temperature Coefficient of. F. W. Reynolds 658
Sulphur, Liquid, Electrical Properties of. D. H. Black 937
Super Conductivity, Principles of Theory of. E. Kretschmann 207
Thermal and Electrical Conductivities of some Pure Metals. F. H. Schofield .. 1425
Thermic Emission of Electrically-charged Particles. H. J. Spanner 647
Tungsten and Candle-power of Black Body, Characteristics of. C. Zwikker .. 2668
Vaporised Salts in Flames, Conductivity of. S. Kalandyk 652
Viscosity and Electrolytic Conductivity, Variation of, with Temperature. M. Wien 2797

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Conductivity (Thermal).

Aluminium Alloys, Thermal and Electrical Conductivities of. H. Masumoto. 939B
Bismuth, Thermal Conductivity of, in Transverse Magnetic Field. F. A. Ward 147
Blankets, Measurement of Heat Insulation and Related Properties of. P. D. Sale and A. F. Hedrick ... 896
Cooling of Hot Bodies in Gases and Liquids. R. Seeliger ... 1692
Heat Conductivity of the technically more Important Metals. M. Jakob ... 146
Heating and Cooling of Bodies of Simple Geometrical Form. H Gröber ... 1922
Measurements, *see* separate section.
Metallic Conduction and Scattering of Electrons by Atoms, Kinetic Theory of. E. L. Davies and G. H. Livens ... 1724
Solid Electric Insulators, Thermal Conductivity of. W. M. Thornton ... 1132
Solids and Liquids, Methods of Measuring Thermal Conductivity in. L. R. Ingersoll ... 588
Thermal and Electrical Conductivities of some Pure Metals. F. H. Schofield . 1425
,, Conductivity, New Methods for Measurement of. T. Barratt and R. M. Winter ... 1424
Unilateral and Periodically Heated Walls, Distribution of Temperature, Passage of Heat and Storage Power in. C. Schwarz ... 2720
Vacuum Vessels, Metal, containing Liquid Oxygen, Conduction of Heat down Necks of. G. R. D. Hogg ... 1133
Wiedemann-Franz Law. O. Feussner ... 887

Critical Points and Constants.

Activity Constants of Dilute Aqueous Solutions of Hydrogen Chloride, Thallous Chloride and Lead Nitrate. M. Randall and A. P. Vanselow ... 392
Constant *i* of the Thermodynamic Vapour-pressure Equation for Molecules containing more than one Atom. A. Eucken, E. Karwat and F. Fried.. 165
Contraction Constants and Affinity of Solid Compounds. A. Balandin ... 2184
Critical Pressure-Ratio for Gases as affected by Variable Specific Heat. W. J. Walker ... 160
Cryoscopic Measurements, *see* section Freezing-, Melting-, and Boiling-points.
Deposits from Molecular Rays, Formation of, Influence of Ray Density and Geometrical Dimensions upon. J. Estermann ... 2317
Electrified Spherical Corpuscles. L. Décombe ... 787
Ethyl Ether near Critical Point, Viscosity of. A. L. Clark ... 746
Gaseous Equilibrium Constants, Calculation of. S. W. Saunders ... 612
Haber Equilibrium Data, Representation of, by Equation. L. J. Gillespie ... 1693
Hydrogen Cyanide, Critical Constants and Vapour-pressures of. G. Bredig and L. Teichmann ... 2725
Iron, Steel and other Metals, Critical Point of, *see* section Metallography.
Joule's First Measurements of " J." W. W. H. Gee ... 1924
Liquids, Critical Temperature and Dilatation of. N. de Kolossowsky ... 1920
Measurements, *see* separate section.
Molecular Heats of Gases, especially of Ammonia, Methane, and Hydrogen, at Low Temperatures, Temperature Dependency of. F. A. Giacomini . 2122
Photo-Elastic Constants of Glass as affected by High Temperatures and by Lapse of Time. F. C. Harris ... 755
Ternary Mixtures, Critical Solution Temperature of. A. Boutaric and G. Corbet ... 948
Trouton's Law at Absolute Zero of Temperature. N. Perrakis ... 1691

Crystals and Crystal Structure.

Aliphatic Ketones, Saturated, X-Ray Investigation of. W. B. Saville and G. Shearer ... 1556
Aluminium Crystals, Plastic Extension and Fracture of. G I. Taylor and C. F. Elam ... 2415
,, , Electromotive Behaviour of. A. Smits ... 229
Atomic Numbers and Approach of Ions in Crystal Lattice. A. F. Scott ... 1551
Benzene Ring. E. Schröer ... 1321
Cæsium Tri-iodide and Cæsium Dibromoiodide. R. M. Bozorth and L. Pauling 2224
Calcite and Rock-salt, Grating Space of. A. H. Compton, H. N. Beets and O. K. DeFoe ... 1815
,, Determination of Angle between Cleavage Faces of, by Use of X-Rays. H. N. Beets ... 1814
Carbon Atom in Crystalline Structure. W. Bragg ... 785

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Crystals and Crystal Structure, *continued.*

Crystal Forms, Modification of, by Foreign Matter dissolved in Mother Liquor. P. Gaubert 1318
,, Groups and Crystal Dynamics. E. Waelsch 1813
,, Potential Constant and Cubic Crystal of least Potential Energy, Calculation of. J. E. Jones and A. E. Ingham 1812
,, Powder Analysis by X-Rays, Focusing Method of. J. Brentano 1663
,, Recovery. Observations on Softening of Hardened Tungsten Crystals. F. Koref 2223
,, Structure and Absorption Spectra. R. Hill and O. R. Howell 24
,, ,, by Means of Radio-active Substances, Experiments on. K. Horovitz 465
,, ,, of some Binary Carbides and Nitrides. K. Becker and F. Ebert 1319
Crystalline Substances, Thermal Expansion Coefficient of. Y. Endo 891
Crystallisation of Substances from Solution, Effect of Various Factors upon Velocity of. J. D. Jenkins 1985
Crystals and Chemical Constitution, Thermal Expansion in. F. A. Henglein . 2536
,, , Electronic Conduction in. B. Gudden and R. Pohl 2590
,, , Mixed, Optical Properties of. Mary W. Porter..... 2466
Cuprite and Rutile, Crystal Structure of. G. Greenwood 21
Elastic Lattice Structures, Equilibrium of. O. Sesini 263
Fatty Acids and Di-acids, Study of, by Means of X-Rays. J. J. Trillat 1818
,, ,, , Structure of. X-Ray Analysis. G. Friedel 1317
Ferrite and Cementite in Pearlite, Inner Crystalline Structure of. N. T. Belaiew 2221
Glass, Structure of. N. Seljakow, L. Strutinski and A. Krasnikow..... 2433
Graphite, Structure of. J. D. Bernal 471
Growth and Wasting of Crystals. G. Friedel 279
,, of Metal Crystals from Gas Phase. H. Fischvoigt and F. Koref 2624
Hall Effect of Photoelectric Primary Current in Non-conducting Crystals. H. Lenz 202
Inorganic Salts, Crystalline Structure of. W. L. Bragg 2226
Iodo-Succinimide, Crystallographic and Optical Properties of. A. E. H. Tutton 2228
,, , X-Ray Examination of. Kathleen Yardley 2227
Lattice Constants of Twelve Common Metals, Precision Measurements of. W. P. Davey 2225
,, Energy of Crystals, Measurement of. W. Wessel 466
,, Theory of Crystal Structure of Titanium Oxides, Rutile and Anatase. O. F. Bollnow 2437
,, ,, of Distorted Ions G. Heckmann 1320
Laue, Diagrams of, obtained by Means of Monochromatic X-Rays and Structure of Mother-of-pearl. J. H. Shaxby 1118
Lead and Thallium, Crystalline Structure of. G. R. Levi 22
Lithium Potassium Sulphate, Crystal Structure of. A. J. Bradley 1554
Long-chain Compounds, (II. Hydrocarbons), Further X-Ray Measurements on. A. Müller and W. B. Saville 1557
Magnesium and Zinc Crystals, Optical Constants of. M. E. Graber 2665
,, Fluoride, Crystal Structure of. H. E. Buckley and W. S. Vernon. 1816
Magneton and Rare Earths. B. Cabrera 1555
Mercuric Sulphide, Crystal Structure of. I. N. H. Kolkmeijer, J. M. Bijvoet and A. Karssen 282
Mercurous Halides, Crystal Structure of. R. J. Havighurst 2015
Metal Crystals, Researches on. III. Thermal Expansion of Zinc and Cadmium. E. Grüneisen and E. Goens 784
Metallic Crystals, Flow Resistance of. O. Hasse and E. Schmid 2222
Metals, Contribution to Theory of. J. Frenkel 472
,, , Deformation and Recrystallisation of. R. Glockler 1512
Mixed Crystals, Diffusion in. H. Braune 19
,, ,, , New Kind of. H. G. Grimm 470
Molecular Fields, Determination of. III. Crystal Measurements and Kinetic Theory Data. J. E. Jones 789
Monochromatic X-Rays in Production of Laue Diagrams and on Structure of Mother-of-pearl, Use of. J. H. Shaxby 1909
Monoclinic Double Sulphates containing Thallium. A. E. H. Tutton..... 2014
Monocrystals, Strengthening of, by Alloying and Stretching. P. Rosbaud and E. Schmid 1817

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Crystals and Crystal Structure, *continued.*

Nickel, Electrolytic, Structure of. G. Wazau 783
Organic Compounds, Liquid, Theoretical Stoichiometry of Space occupied, and Intermolecular Forces in. I and II. E. Wöhlisch 1553
Orientation of Crystals in Metal Test Pieces subjected to Small Strains followed by Heat Treatment. C. F Elam 2434
Photoelectric Primary Current in Crystals, Mechanism of. B. Gudden and R. Pohl 662
,, ,, ,, in NaCl Crystals. B. Gudden and R. Pohl . 1967
Photoelectrically Sensitive Crystals, Passage of Electrons through. H. Lenz.. 2755
Piezoelectric Crystal Rods, Optical Methods of Demonstrating High-frequency Longitudinal Oscillations of. E. Giebe and A. Scheibe 2593
,, Properties of Crystals, Qualitative Examination of. E. Giebe and A. Scheibe 2594
,, Standards of High Frequency. W. G. Cady 1734
Piezoelectricity, Lattice Theory of. G. Heckmann 2592
Plastic Deformation of Metals, Effect of Free Surfaces on. F. C. Thompson and W. E. W. Millington 753
Polyatomic Polar Molecules, Shape of. I and II. F. Hund..... 1558
Recrystallisation, Investigation of, by Means of X-Rays. R. Glocker and E. Kaupp 369
Reflection of X-Rays by Alkali Halide Crystals. Alice H. Armstrong, W. Duane and R. J. Havighurst 1907
,, ,, from Quartz, Variation with Temperature of Intensity of, and its Bearing on Crystal Structure. R. E. Gibbs 1660
Rhombohedral Angle of Crystals, of Calcite Type, Theoretical Calculation of. W. L. Bragg and S. Chapman 281
Rhombohedric Carbonates of Bivalent Metals, Crystalline Reticuli of. G. R. Levi and A. Ferrari 23
Rochelle Salt Crystal, Relation between Mechanical and Piezoelectrical Properties of. F. C. Isely 665
,, ,, Crystals, Dielectric Anomalies in. J. Valasek..... 666
Rock-salt and Sylvine at Low Temperatures, Determination of Elasticity and Torsion Coefficients of. T. Steinebach 2416
,, Crystals, Density Determination of. W. Geiss 1281
,, under Water, Plasticity and Strength of. W. Ewald and M. Polányi 8
,, , Natural, Strength and Elastic Limits of. A. Joffé and M. Lewitsky 1298
Silver Phosphate and Silver Arsenate (Ag_3XO_4), Crystal Structure of. R. W. G. Wyckoff 2436
Simple Compounds and Different Varieties of Solid State, New Properties of. E. Friederich 1811
Single Crystals, Flow in. W. Geiss 280
,, -Metal Crystals, Properties of. P. W. Bridgman 467
Space-Groups, 230, Tabulated Data for Examination of, by Homogeneous X-Rays. W. T. Astbury and Kathleen Yardley 25
Stannous Oxide and Litharge, Isomorphism of. G. R. Levi 786
Steel, Hard, Crystal Structure of. K. Heindlhofer 468
,, , X-Ray Studies on Crystal Structure of. A. Westgren and G. Phragmén 469
Strengthening and Recrystallisation. R. Gross 26
Tin Crystals, Alterations on Ductility of. M. Polányi and E. Schmid 2016
Transparence, Anisotropic, and Diffusion in Oriented Liquid Crystals. A. Perrier 321
Tungsten Single Crystals under Tensile Stress, Studies on Deformation of. Research Staff of the General Electric Co., London 20
X-Ray Apparatus, Simple, for Investigation of Crystals. H. Lange 1911
X-Rays in Industrial Control. H. Pilon 2302

Density.

Aniline and its Aqueous Solutions, Physical Properties of. M. P. Applebey and F. G. Davies 2409
Apparatus, *see* separate section.
Chemically Homologous Series, Optical Properties of. A. Krethlow 2470
Crystallised Minerals and Chemical Compounds, Specific Gravity of. U. Panichi 732
Gravitational Field, External, and Internal Densities. M. Brillouin 1833
Membrane, Stretched, with Particular Law of Density, Vibrations of. E. L. Ince 1800
Mercury, Specific Gravity of. K. Scheel and F. Blankenstein 1785

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Density, *continued.*
Methyl Chloride, Density of. T. Batuecas 2201
Molecular Interaction in Liquid State, Theory of. G. N. Antonoff 2126
Oxygen, Density of. G. P. Baxter and H. W. Starkweather 734
Picnometer, New, Densities of Certain Aqueous Potassium Chloride Solutions as determined with. H. C. Parker and Elizabeth W. Parker 1280
Rock-salt Crystals, Density Determination of. W. Geiss 1281
Sediments by Means of Automatic Balance, Theory of Mechanical Analysis of. R. A. Fisher and S. Odén 987
Standard Density and Volumetric Tables 733
Zirconium and Hafnium, Density of Oxides of. G. Hevesy and V. Berglund.. 244

Dielectrics, *see also* section Capacity.
Apparatus, Simple, for Obtaining Comparative Measurements of Resistances of Medium Insulators. A. J. Philpot..... 1483
Dielectric Absorption and Power Losses : A Contact Theory. L. Hartshorn.. 2151
,, Constants. G. E. Bell and F. Y. Poynton 1964
,, ,, at Aqueous Solutions on Temperature, Dependence of. L. Kockel 2757
,, ,, of Liquid Mixtures. M. Grützmacher 211
,, ,, of Liquids, Electrometer Method for Measuring. A. P. Carman..... 418
,, Hysteresis and Allied Phenomena, Studies on. Part III. H. Saegusa 1204
,, Relations and Molecular Association. Luise Lange 2756
,, Viscosity. J. Granier 936
Dielectrics, General Law of Electrical Conduction in. S. W. Richardson 1163
Electric Field, Refraction of. H. Stauffer 349B
,, Strength, Initial Discharge and Spark Discharge Field Intensities at a Frequency of 500. F. Müller 209
Electrical Constants of Dielectrics for Radio-frequency Currents. R. V. Guthrie, Jr. 667
Electrolytes, Dielectric Constants of. H. Ulich 2758
,, , ,, ,, . P. Walden, H. Ulich and O. Werner... 2359
,, , ,, ,, of Solutions of. P. Walden, H. Ulich and O. Werner 1730
Electrostriction in Insulating Liquids. G. Bruhat and M. Pauthenier..... 1195
,, in Liquids which are only slightly Birefracting. M. Pauthenier 920
Glycerine, Dielectric Constant and Absorption Coefficient of. R. Bock 1478
Iron, Galvano-Magnetic Experiment upon. G. Polvani 912
Liquid Good Conductors, Dielectric Constants of. R. Fürth 1161
Liquids, Dielectric Constants of. H. Harris 2357
,, , ,, ,, . L. A. Sayce and H. V. A. Briscoe 1477
Measurements, *see* separate section.
Mercury against its Ions in Aqueous (1) Methyl Alcohol, (2) Acetone, and (3) Pyridine, Electrode Potential of. J. Ghosh, P. R. Chaudhuri and A. Sen..... 1480
Mica, Dielectric Properties of. D. W. Dye and L. Hartshorn..... 934
Organic Liquids, Dielectric Constants and Chemical Constitution with. E. H. L. Meyer 935
,, ,, , Effect of Pressure on Dielectric Constants of. M. Grenacher 2358
Poynting Flux in gradually varying Dielectric. J. A. Wilcken..... 1160
Rochelle Salt Crystals, Dielectric Anomalies in. J. Valasek 666
Solid Dielectrics, Permanent Polarisation of. S. Mikola 1966
,, Insulators, Penetration of. L. Inge, N. Semenoff, A. Walther 2150
Squalene Hydrocarbon, Electric Uses of. Deleterious Effect of Fibres on Insulation Varnish, etc. W. Ogawa, T. Hanyu and T. Nishiuchi 210
Water containing Fluid Insulators, Electric Discharge Mechanism in. A. Gyemant 2570
,, in Strong Electrolytes, Dielectric Constant of. H. Zahn 1479

Diffusion.
Chemical Change, Effect of Diffusion on Time-Rate of. S. Sano 1516
Diffusion in Solution, Stokes-Einstein Law for. C. C. Miller 950
,, Velocity, Viscosity and External Pressure, Relation between. E. Cohen and H. R. Bruins 1291
Equilibria in Systems in which Phases are separated by a Semipermeable Membrane. 192. F. A. H. Schreinemakers 1539

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Diffusion, *continued.*
Fractionating Column with Moving Parts. J. E. Myers and W. J. Jones ... 991
Hydrogen, Diffusion of into Air, measured by Interferometer U-Gauge. C. Barus ... 781
Mixed Crystals, Diffusion in. H. Braune ... 19
Solid Diffusion, Experiment in. F. C. Thompson and W. H. Dearden ... 226
Suspension, Diffusion of Particles in. J. H. Shaxby ... 990

Dilatation.
Alkal Metal Halides at Low Temperatures, Thermal Expansion of. F. A. Henglein ... 1919
Aluminium and Various Important Aluminium Alloys, Thermal Expansion of. P. Hidnert ... 1426
Binary Mixed Crystals, Thermal Expansion of. C. H. Johansson ... 1684
Bismuth, Metallic, Thermal Expansion of Crystals of. J. K. Roberts ... 148
Coefficients of Expansion of Liquids, Dependence of, on their Temperature and Chemical Structure. J. J. Saslawsky ... 383
Copper and Aluminium, Dilatometric Anomaly of Solid Solutions of. P. Chevenard ... 2306
Crystalline Substances, Thermal Expansion Coefficient of. Y. Endo ... 891
Crystals and Chemical Constitution, Thermal Expansion in. F. A. Henglein .. 2536
Invar, Anomaly of Dilatation of. C. Benedicks and P. Sederholm ... 2589
Liquids, Critical Temperature and Dilatation of. N. de Kolossowsky ... 1920
Molybdenum, Thermal Expansion of. P. Hidnert and W. B. Gero ... 589
Quartzglass Apparatus for Estimation of Coefficient of Expansion by Heat at High Temperatures. H. Sieglerschmidt ... 2537

Discharge in Gases and in Vacuo (Electric), including Discharge of Condensers, *see also* section Rays.
Abnormally Low-voltage Arc in Mercury-Vapour, Argon and Helium. R. Bär 1449
Absorption in Excited Neon. K. W. Meissner ... 1188
,, ,, ,, ,, . Remarks on Work of K. W. Meissner. P. Jordan 1710
Air, Total Ionisation produced in, by Electrons of Various Energies. Gladys A. Anslow ... 1952
Arc Characteristics, Minimal Length. H. E. Ives ... 921
,, Light, Temperature Relationship of Kathode Spot of. H. Stolt ... 1459
,, Lights with Non-glowing Kathode. A. Güntherschulze ... 191
,, , Mercury Vacuum, Reactions in. A. Güntherschulze ... 1704
Arcs, Low-voltage, in Sodium and Potassium Vapours. F. H. Newman ... 1941
Argon, Determination of Critical Potential of L3 Line of. F. Holweck ... 1109
,, , Single and Double Ionisation of, by Electron Impacts. H. A. Barton 1951
Atoms and Electrically-charged Particles, Shock between. E. Fermi ... 644
Ball Lightning, Theory of. E. Mathias ... 181
Band Spectra of Carbon, Influence of Pressure on. Consequences for Theory of Comets. F. Baldet ... 1708
Canal Rays of Hydrogen, Doppler-Effect on. H. Krefft ... 410
,, ,, , Acceleration of. F. Hoffmann ... 2581
,, ,, , Electromagnetic Analysis of. R. Döpel ... 1711
Carbon Arcs, Relation between Current, Voltage, and Length of. A. E. R. Westman and R. B. Walker ... 2743
,, Dioxide and Hydrogen, Interaction of, in Corona due to High-frequency Alternating Currents. R. W. Lunt ... 1992
Chlorine by Electric Discharges, Activisation of. K. Schaum and A. Feller . 403
Critical Potentials of Gases, Measurement of. E. G. Dymond ... 183
,, ,, ,, , Precise Measurement of. E. G. Dymond ... 1949
Crookes' Tube. A. Dauvillier ... 2587
Dark Discharges from Points in Gases. J. Zeleny ... 182
Dissociation of Electrons and Electro-Chemical Normal Potential, Relationship between Work of. A. Güntherschulze ... 1705
Electric Strength, Initial Discharge and Spark Discharge-Field Intensities at a Frequency of 500. F. Müller ... 209
Electrical Explosion of Tungsten Wires. H. V. A. Briscoe, P. L. Robinson and G. E. Stephenson ... 1175
Electricity in Gases. K. K. Darrow ... 1465
Electron Emission from Adsorbed Films on Tungsten. K. H. Kingdon ... 645
,, ,, from Oxide-coated Filaments. L. R. Koller ... 1948

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Discharge in Gases and in Vacuo (Electric), including Discharge of Condensers, *see also* section Rays, *continued*.

Electron Reflection in Gases: Researches on Hydrogen. H. Baerwald 2136
Electrons, Heat of Evaporation of. J. J. Weigle 1467
,, , Motion of, between Coaxial Cylinders under Influence of Current along the Axis. A. W. Hull 2138
Elementary Charge E from Measurements of Shot-Effect, Determination of. A. W. Hull and N. H. Williams 1458
Extinction Voltages of Certain Types of Low-tension Discharge Tubes under Different Conditions, Variation of. J. Taylor and W. Stephenson 1945
"Flashing" of Air-discharge-tubes, Critical Resistance for. J. Taylor and W. Clarkson 1454
,, Phenomena of Certain Types of Discharge-tubes. J. Taylor and W. Clarkson 1455
Fluorite, Effect of Heat Treatment upon Kathodo-Phosphorescence of. F. G. Wick and J. M. Gleason 837
,, , Kathodo-luminescence of. F. G. Wick 105
Gas at Low Pressures, Electric Discharge in. R. Magini 2333
,, Films, Removal of. W. D. Bancroft 1230
,, Ignition by Electric Sparks, Thermal Theory of. J. D. Morgan 1468
Gaesous Diffusion on almost Saturated Currents, Influence of. G. Jaffé 408
Glow Current, Present Position of Theory of. R. Holm 639, 2335
,, Discharge. A. Güntherschulze 640
,, ,, in rapidly Alternating Fields. F. Kirchner 2569
,, ,, , Dynamic Flame-tension of. E. Mauz and R. Seeliger 1172
,, ,, , Flame Tension of. G. Valle 2566
,, ,, , Influence of Incident Foreign Kathode-Rays on Kathode Fall of. A. Wehnelt and A. Jachan 1943
,, ,, , Intermittent, Flame Tension and Stability of. H. Geffcken .. 1703
,, ,, , Mechanism of. Güntherschulze 2739
,, Electronic Emission at Transformation and Melting-points. A. Goetz .. 1718
"Glow" Relay, Technical Application of. H. Geffcken and H. Richter 939
Gold, Production of, from Mercury under Action of Electric Discharge. A. Miethé 1509
Graphite, Fusion and Evaporation of. E. Ryschkewitsch 1432
,, , Fusion and Heat of Evaporation of. K. Fajans 1433
Gridless Receiving and Amplifying Valves with Control Plates. H. Cohn 650
Helium and Neon in Vacuum Tubes, Occurrence of. R. W. Riding and E. C. C. Baly 2749
,, , Mobilities of Positive Ions in. H. B. Wahlin 637
Hertzian Resonator, Damping of Oscillations of. W. P. Allis 405
High-voltage Discharge, Kathode Fall of Potential in. G. P. Thomson 925
Hydrogen, Behaviour of, in High-frequency Corona Discharge. R. W. Lunt .. 1993
,, , Low-voltage Glows in. G. Stead and B. Trevelyan 194
,, , Primary and Secondary Products of Ionisation in. H. D. Smyth .. 1950
,, , Striking and Breaking Potentials for Electron Discharges in. O. W. Richardson and T. Tanaka 922
Inert Gases, Excitation and Ionisation Potentials of. G. Hertz and R. K. Kloppers 1712
Initial Discharge Voltage and Breakdown Field Intensity for Parallel Cylindrical Electrodes. H. Löber 2135
Ionisation Potentials, Successive, Calculation of. D. R. Hartree 185
,, Problems, Application of Positive Ray Analysis to. H. D. Smyth .. 926
Ionised Gases, slightly, Characteristic of Currents in. E. Schwaiger 1462
,, ,, , ,, , Experiments on Characteristic of Currents in. W. Schlenck 1463
Ions, Initial Positive, Relative Mobility of, in Gas Mixtures at Low Pressures. H. B. Wahlin 1946
,, , Positive, Liberation-Energy of. A. Güntherschulze 1452
Kathode during Luminous Discharge, Theory of Phenomena at. A. Güntherschulze 2740
,, Fall, Current Strength and Thickness of Fall Sphere of Glow Discharge in Mixtures of Gases which do not react chemically. A. Güntherschulze 184
,, -Rays having Moderate Velocities, Production and Investigation of. A. Becker 190
,, ,, through Matter, Passage of. B. F. J. Schonland 1957

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Discharge in Gases and in Vacuo (Electric), including Discharge of Condensers, *see also* section Rays, *continued.*

Kathode-Rays, Absorption of, in Aluminium Foil. H. M. Terrill 1184
,, ,, , Slow, New Method of Production of. G. Reboul 2573
Lamps with Glowing Kathode, Experimental Method of Research on Occurrences in. A. Katsch 2140
Layer Discharge, Theory of. A. Güntherschulze 1453
Low-tension Discharge-tubes with Electrodes near together, Volt-Ampere Characteristics of. J. Taylor 1456
,, ,, , Properties of. J. Taylor 404
,, -velocity Electrons through Aluminium Foil, Apparent Transmission of. H. E. Hartig 2750
,, -voltage Arcs in Phosphorus Vapour. O. S. Duffendack and H. Huthsteiner 1450
,, Mercury Arcs, Metastable States in. M. Marshall 641
Mercury-Vapour Lamp, Constricted, Special Energy Characteristics of. Extremely Concentrated Source of Ultra-violet Illumination. G. S. Forbes and G. R. Harrison 2742
,, ,, , Spectral Energy Characteristics of. G. R. Harrison and G. S. Forbes 1178
,, , Striated Discharge in. W. H. McCurdy 196
Metal Arcs, Distribution of Electric Field and Stark-Effect in. H. Nagaoka and Y. Sugiura 850
Metallic Electrodes *in vacuo*, Electric Currents through Short Distances between. H. Rohmann 1451
Methane and its Absorption in the Ultra-violet, Critical Potential of. G. Glockler 1466
Multiatomic Gases, Ionising Potentials of. C. A. Mackay 407
Negatively Charged Probes, Phenomena with, and with Particles suspended in Gas Discharge Tubes. W. Dällenbach, E. Gerecke and E. Stoll 1180
Neon Tubes, Properties of. B. N. Ghose 1177
,, , and Hydrogen and Nitrogen, Electrical Properties of. S. P. McCallum and C. M. Focken 2137
Nitric Oxide, Electrical Formation of. G. M. Schwab and S. Loeb 638
Non-oscillatory Abnormal Low-voltage Arc, Diffusion of Electrons against an Electric Field in. K. T. Compton and C. Eckart 1457
Oscillation Phenomena in Gas Discharges of Different Kinds. F. Schroeter .. 2738
Ozone, Production of, by Silent Discharges at Low Pressures. E. Warburg and W. Rump 2186
Photoelectric Effect, *see* separate section.
,, Emission, Effect of Kathode-Rays on. H. Dember 2574
Point Discharge and Electric Wind. W. Deutsch 1709
Positive Column of Arc Discharges in the Noble Gases, Moved Layers in. C. Samson 2737
,, ,, , Diffusion Theory of. W. Schottky 780
,, Crater, Temperature of. M. Pierucci 193
,, Ions in Air, Mobility of. H. B. Wahlin 1716
,, Rays, Recent Researches in. W. Wien 2580
Potassium Vapour, Ionisation of, under Action of Visible Light. A. Arnulf .. 1953
Pseudo High Vacuum. A. Güntherschulze 1706
Quartz-Mercury Arc, Output of Radiation from, during Period after First Striking. B. D. Watters 406
,, Lamp as Photochemical Light Source. L. Reeve 1179
Quasi-neutral Electric Diffusion in Gas, at Rest or Flowing. W. Schottky and J. v. Issendorff 1464
Radiation given out by Gases through which Electric Discharges are Passing. J. J. Thomson 1707
Rectified Current, High-Power, at 500,000 Volts. J. Saget 1417
Rotating Carbon Arc. Pauthenier 2134
Rubidium and Cæsium Vapours, Low-voltage Arcs in. F. H. Newman 2568
Rupture, Electric, Nature of. W. O. Schumann 2583
Salt Vapours, Ionisation of. V. Kondratjeff 1954
Schottky-Effect in Low-frequency Circuits. J. B. Johnson 2571
Schrot-effect, Theory of. N. R. Campbell 2336
,, , ,, . T. C. Fry 1460
Selenium, Change in Conductance of, due to Electronic Bombardment. R. de L. Kronig 653

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Discharge in Gases and in Vacuo (Electric), including Discharge of Condensers, *see also* section Rays, *continued*.
Selenium, Photoelectric Emission from. W. del Regno 664
Siemens' Tubes, Theory of Chemical Action in. E. Warburg 2187
Slow Electrons in Electric Fields, Diffusion of. G. Hertz 2139
,, ,, in Gases, Absorption Coefficient for. R. B. Brode..... 1947
Space Charge and Thermionic Currents. W. S. Kimball 1956
,, ,, Effect. E. W. B. Gill..... 1955
Spark Constants and Waves on Wires. M. Toepler 1470
,, Discharge, Electric, Actinic Action of. F. Berger 1944
,, Potential and Kathode Fall. H. Stücklen 189
,, Potentials, Generalisation of Townsend Theory of. W. Dällenbach ... 2334
Sparking Potentials and Glow Discharge. W. Dällenbach 2567
Sparks Lag and Shape. P. O. Pedersen 923
Squalene Hydrocarbon, Electric Uses of. Deleterious Effect of Fibres on Insulation Varnish, etc. W. Ogawa, T. Hanyu and T. Nishiuchi 210
Striated Glow Discharge in Mercury-Vapour, Theory and Experiments relating to. K. T. Compton, L. A. Turner and W. H. McCurdy 1171
,, ,, -light, Gas Kathodes and their Radiation in. E. Goldstein 1942
Thermal Ionisation. M. N. Saha and N. K. Sur 1461
Thermic Emission of Electrically-charged Particles. H. J. Spanner 647
Thermionic Effect, Action of Light on. E. Henriot and R. Moens 1719
,, Emission, *see* separate section.
Three and Four-electrode Valves, some Applications of, to Photoelectric Cells. G. Ferrié 1733
Time of Lag with Spark Discharge, Remarks on K. Zuber's Measurement of. M. v. Laue 1174
,, ,, with Spark Discharger. K. Zuber..... 1173
Triodes, Diagram of Plate Current in. O. M. Corbino and E. Persico 1961
Tungsten Arc Characteristics, Short-length. S. H. Anderson and G. G. Kretchmar 2741
,, , Molybdenum and Tantalum, Electron Emission from. S. Dushman, H. N. Rowe, Jessie Ewald and C. A. Kidner..... 1717
Vacuum Discharge Tubes, Effect of Surface Charges in. A. R. Olson and T. F. Young..... 1176
,, Tubes, Passage of Electricity through. R. Whiddington 2141
Valves with Oxide-coated Kathodes, Space Charge Effects in. A. Katsch ... 924
,, , Transmitting, Characteristics (Reissdiagramme) of. H. Rukop 649
Water, containing Fluid Insulators, Electric Discharge Mechanism in. A. Gyemant 2570

Dispersion (Light).
Active Sugars in Adsorbed State, Optical Inactivity of. S. S. Bhatnagar and D. L. Shrivastava 344
Anisotropic Liquids, Contributions to Theory of. C. W. Oseen 2005
,, ,, , Further Contribution to Theory of. C. W. Oseen 765
Birefringence, Electrical, of Limonene. R. de Mallemann..... 2073
Chemically Homologous Series, Optical Properties of. A. Krethlow 2470
Cholesterol Substances, Rotatory Power of. Royer 1074
Classical Dispersion Formula for Monatomic Gases and Vapours, Correction to Paper on. K. F. Herzfeld and K. L. Wolf 1854
,, ,, ,, ,, ,, ,, ,, ,, , Test of. K. F. Herzfeld and K. L. Wolf 1070
Diffracting Power in Certain Crystals, Distribution of. R. J. Havighurst.... 2715
Diffusion of Light in Fluids. Y. Rocard..... 1069
Dispersion. L. S. Ornstein and H. C. Burger 2072
,, and the Correspondence Principle. G. Wentzel 338
Iodo-Succinimide, Crystallographic and Optical Properties of. A. E. H. Tutton 2228
Lithium, Chemistry of Relation between Contraction, Refraction and Absorption of Light in Aqueous Salt Solutions. G. F. Hüttig and M. Keller 2464
Magnesium and Zinc Crystals, Optical Constants of. M. E. Graber 2665
"Moiré," Application of, to Study of Mica Deformations. M. Mulot 2263
Molecular Dispersion of Light in Liquids. R. Gans 825
Multiply Periodic Systems, Two-coupled, Statistics of Quantum Theory and Theory of Dispersion, Remarks on. G. Breit..... 2643
Mutarotation. R. Kuhn and P. Jacob 339

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Dispersion (Light), *continued.*
Optical Diffraction, Problems in Theory of. E. T. Hanson 1064
,, Dispersion, Theory of. G. Breit 1071
,, Rotation, Effective Wave-length in Determination of. H. Schulz .. 2467
Organic Compounds—Simple Dispersion in 1-Methylcyclohexylidene 4-Acetic Acid, Rotatory Dispersive Power of. E. M. Richards and T. M. Lowry 1073
Paramagnetic Solutions, Magnetic Rotary Dispersion in. R. H. Roberts 1342
Refraction and Dispersion in Light-Quantum Theory. L. S. Ornstein and H. C. Burger 1068
Rotatory Dispersion of Derivatives of Tartaric Acid. Part I. Methylene Derivatives. P. C. Austin and V. A. Carpenter 337
Scattering and Dispersion, Quantum Theory of. A. Smekal 1855
Sodium Chloride, Distribution of Diffracting Power in. R. J. Havighurst 2714
Spheres, Small Dielectric, Radiation Diagrams of. H. Blumer 1850
Stress Optical Coefficients of Glass for Direct Tension and Pressure. S. R. Savur 2262
Walden Inversion. B. K. Singh 40

Dissociation and Ionisation (excluding Gases).
Acids, Undissociated, Nature of. H. v. Halban 830
Ammonia, Carbon, Hydrogen Cyanide, Hydrogen Equilibrium, and Free Energy of Hydrogen Cyanide. R. M. Badger 447
Cryoscopic Measurements, *see* section Freezing-, Melting-, and Boiling-points.
Diffusion Potentials and Ionic Mobilities of Benzoates and Salicylates and their Modification by a Membrane of Parchment Paper. E. B. R. Prideaux and W. E. Crooks 225
Dissociation of the Bromine Molecule, Rate of. M. Bodenstein 236
Ionisation Constant of Hypochlorous Acid. F. G. Soper 444
,, due to Electric Discharge, *see* section Discharge.
,, of Atmosphere, *see* section Static Electricity.
Ions, Hydration of. A. Gyemant 977
Mobility of Ions on Solid Cuprous Sulphide. H. Braune and O. Kahn 966
Oxidation Potentials. S. R. Carter and F. H. Clews 446
Phosphorus, Glow of. (Lord) Rayleigh 704
Picric Acid in Aqueous Solution, Electrolytic Dissociation of. H. v. Halban and L. Ebert 716
Platinum and Iridium, Quantitative Separation of. S. Aoyama 445

Dynamics and General Mechanics.
Adherence of Perfect Liquid to Solid with which it is in Contact and Theorem of Lagrange. M. Roy 994
Aerodynamic Force on Aeroplanes, Measurements of. E. Huguenard, A. Magnan and A. Planiol 772
Aeroplane Manœuvres, Method of Studying Inertial Forces in. E. Huguenard, A. Magnan and A. Planiol 2220
Aeroplanes, Diagram of Air-pressure in Static Calculation of. G. Albenga 268
,, , Forces which support, and their Relation with Hydrodynamic Actions at a Distance. V. Bjerknes 773
Airscrew, Experimental Study of Vibrations in Blades and Shaft of. A. Fage 1545
Air Waves of Finite Amplitude. W. B. Morton and Amy I. Woods 161
Ballistic Principle for Velocity of Light to Doppler-Effect, Application of. M. la Rosa 276
Balmer Law as Equation of Motion. L. Page 1823
Bent Rods, Breaking Strain of, under Elastic Tensions. H. Zimmermann ... 759
Circular Cylinders in Viscous Fluid, Motion of. R. A. Frazer 2008
Continuous Viscous Liquids, Plane Vertical Motion of. J. Grialou 7
Deep Water, Irrotational Waves in. T. Levi-Civita 770
Deformability and Applicability of Surfaces. B. M. Sen 4
Degenerate Systems, Quantum Dynamics of. A. M. Mosharrafa 1312
Dimensional Analysis. N. Campbell 1311
Dissipation Function of Lord Rayleigh. B. Finzi 1806
Distributions, Globular, Study of Properties of. S. D. Wicksell 777
Drop Size in Sprayed Liquids, Measurement of. W. Heubner 1802
Eddington's Natural Unit of Field and Possible Relations between it and Universal Constants of Physics. J. Rice 1569
Einstein's Gravitational Theory, *see* section Gravity.

For the **Explanation** of this Index see p. 947.

Dynamics and General Mechanics, *continued.* Abstract Nos.
Elastic Body, Volume Change of. G. Masing 754
,, Waves along Boundary of Two Solids, Propagation of. R. Stoneley.. 273
Electromagnetic Field and Atomic Radiation, Affine Asymmetrical Theory of. H. Eyraud 1937
Equations of Motion of a System of Particles of Variable Mass. R. Dugas .. 16
Equipartition of Energy in System Comprising Vibrating or Rotating Particles, by J. Jaffé. R. Becker..... 619
Ether Radiation in Spatially Closed World, Problem of. K. Lanczos 1574
,, , Force-Free Flowing, Elastic Vibrations in. O. Wiener 761
Fall of Spheres into Liquids, Photographic Study of. G. E. Bell 12
Flow of Water in Inclined Channel of Rectangular Section. H. Jeffreys 1803
,, Past Objects of Aerofoil Section, Critical Velocity of. E. G. Richardson 1928
Fluid Circulation round Cylindrical Obstacles. Dorothy M. Wrinch 1301
,, Flow, New Theory of. A. B. Cox 766
,, Friction in Pipes and Tractive Losses for Trains, Equivalence of. A. Talon 1304
,, Motion. B. Finzi 771
,, ,, , Apparatus for Investigating certain Types of. E. N. da C. Andrade and J. W. Lewis 252
Fluids in Pipe Bends, Flow of. J. Eustice 989
Gravitation and Principle of Action and Reaction. G. Maneff 1572
,, ,, ,, ,, ,, , Criticism of Paper of G. Maneff. K. Popoff 2026
,, ,, ,, ,, ,, , Objections of A. H. Bucherer and K. Popoff to. G. Maneff 2233
,, and Radiation, Theory of. W. Gore 296
,, , *see* separate section.
Gravitational Field of Moving Mass Point and Dynamical Problem of Two Bodies on Einstein Theory. J. Kudar 1832
Hole in Bent Plate, Effect of. W. G. Bickley 275
Hydrodynamics, Boundary Problem in. C. W. Oseen 764
,, , Two-Dimensional, Problems of. Dorothy M. Wrinch 763
Hydrogen-ion Concentrations with Glass Electrodes, Measurement of. W. E. L. Brown..... 725
Impact between Two Bodies Moving in Rectilinear Paths with Constant Velocities. G. Lübeck 2210
,, of Solid Bodies with Liquids. G. E. Bell 1305
,, , Inelastic. O. Heimstädt 1796
Incompressible Liquid of Velocity Potential due to Vortex Tube, Determination of. B. Stetchkine 2007
Instable Equilibrium by Means of Gyroscopic Forces, Stabilisation of. H. J. E. Beth 1807
Interior Ballistics. Gossot and Liouville 1685
Jaumann's Theory of Gravitation with Observations, F. Schenner's Comparison of. E. Lohr 1011
Kinematics. C. L. R. E. Menges 1614
Liquid Columns, Round, Influence of Degree of Instability on Phenomena of. R. A. Castleman, Jr. 768
,, Jets, Characteristic Curves of. E. Tyler and E. G. Richardson..... 2421
Liquids, Flow of, with and without Velocity Potential. Application to Blades of Turbines. Eydoux 2006
,, , Measurements of Velocities in. L. Escande and M. Ricaud 1293
,, , Molecular Rotation and Flow of. H. Baudisch 767
Mass and Energy. G. Temple 2442
,, deduced entirely from Formula for Addition of Velocities, Notion of Variation of. H. Malet 1309
Material Particle under Attraction of Flat Ellipsoid, Motion of. P. Fatou... 1307
Mechanical Systems, Quantum Theory and Periodicity Characteristics of. G. Wataghin 1008
Mechanics and Einstein Invariance Principle. A. H. Bucherer 2234
,, , Newtonian, and Light Quanta. K. Schaposchnikow 776
Newton's Coefficient of Restitution and Law of Oblique Impact, Method of Measurement of. H. G. Green 2011
Non-ergodic Systems, Statistical Mechanics of. G. Jaffé 1808
,, -Holonomous System, Order of. P. Appell 18
Oblate Spheroidal Harmonics and their Physical Applications. J. W. Nicholson 1306

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Dynamics and General Mechanics, *continued.*

Orbital Motion governed by Inverse Square Law, Simple Cases of. A. Forster 278
Particle projected from Point on Earth's Surface, Variation in Gravity being taken into account, Motion of. J. Robertson 2012
Past and Future, Discriminations between. P. du Val 1568
Pendulum, Influence of the Air on Oscillation Period of. H. Bock 272
,, , Logarithmic Decrement of. D. Bean 1300
Perturbations, Two Methods of Calculation available in Quantum Theory for Calculation of. J. Woltjer, Jr. 1310
Photography, Single-Spark, and its Application to Problems in Ballistics. P. P. Quayle 1866
Pianoforte Hammer, Elastic Impact of. S. Bhargava and R. N. Ghosh 997
Plane Motions of a Liquid, General Properties of. D. Riabouchinsky 270
Projectiles, Drift of. E. T. Hanson 1805
Quadratic Form for Radial Acceleration. R. Hargreaves 14
Quantised World-Lines of Electrons of Hydrogen Atoms, World-Geometry Characteristics indicated by. E. Reichenbächer 1820
Quantum Integrals, Adiabatic Invariance of. P. A. M. Dirac 1809
,, Theory Postulates, Certain. D. N. Mallik 2642
Radiation Pressure, Dynamical Illustration of. E. L. Nicolai 995
Recknagel Disc as Indicator of Speed and Direction, Use of. A. Foch 248
Relativity, Lines of Force in Special Theory of. G. Jäger 1009
,, , *see* separate section.
Resistance Law for Very Small Spheres in Gases, Simple Deviation of. T. Sexl 1810
,, , Law of, to Spherical Particles in a Gas. J. Mattauch 775
Rhombic uniformly Rotating Systems in Electronic Dynamics. U. Crudeli .. 1313
Rotating Bodies, Symmetrical Axial Deformation of. A. Timpe 760
Rotation, High-speed. E. Henriot and E. Huguenard 2013
,, , Relativistic Problems of. T. Takeuchi 274
Small Particles through Gas, Resistance to Motion of. J. Mattauch 2009
Skin Friction of Flat Surfaces, Effect of Length on. T. E. Stanton and Dorothy Marshall 255
Space and Time in Relativist Geometry. G. Giorgi 2440
,, -Time, Curvature Radius of. L. Silberstein 1570
,, ,, , Determination of Curvature of. K. Lundmark 42
Spherical Mass Systems, Relativity Theory of. Lémeray 1567
Synchronisation, General Mechanism of. J. Andrade 1544
Tensors and Tensor Densities, Antisymmetric, Relations between. P. du Val.. 277
Thermodynamics, Phenomenological, Extension of, to Oscillation Phenomena. L. Szilard 2325
Tidal Dynamics, Theorem in. J. Proudman 1547
Time Periodic World and New Treatment of Problem of Ether Radiation. K. Lanczos 1573
Torsional Vibrations in Air at Reduced Pressures, Damping of. R. V. Wagner 271
Trajectories of Small Horizontal Velocity in a Resisting Medium. J. E. Littlewood 11
Turbine Blades, Graphical Determination of Meridian Paths of. Eydoux.... 2215
Turbulence Problem for Allied Questions. I. Experimental Basis. L. Schiller 2423
,, ,, for Straight Circular Pipe. H. Lorenz 2422
,, , New Researches upon. L. Schiller 762
Turbulent Motion. S. Mohorovičić 1302
Units, Ultimate Rational, and Dimensional Theory. G. N. Lewis 1546
Unstable Equilibrium, Stabilisation of, by Means of Gyroscopic Forces. H. J. E. Beth 1308
Vector Analysis, General, with Applications to Electro-dynamical Theory. H. T. Flint 2219
Vibrating String, Forces at Ends of. W. H. George 1299
Vibration of Pump Valves. W. Hort 17
Vibrations of Bars. E. F. Relf and W. L. Cowley 15
,, , Lateral, of Rods with or without End Thrusts, Approximate Calculation of Periods of. K. Shôgenji 778
Virial, Extension of Theorem of. E. A. Milne 2213
Virtual Work, Applications of. K. Hayashi 779
Viscous Fluid, Cinematographic Measurements of Downward Motion of Spheres in and also in Close Proximity to Wall. H. Liebster and L. Schiller.... 1303
,, Liquids, Motion of Spheres, Circular and Elliptic Cylinders through. W. J. Harrison 769

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Dynamics and General Mechanics, *continued.*

Vortex Motion in Resisting Medium with Application to Planetary Vortices. E. Belot 993
,, Rings, Certain, Approximate Method of Calculating Motion of. G. Bouligand 2214
,, Sheets and Circulation. W. Müller 774
Vortices in a Viscous Incompressible Fluid in Plane Motion, Extinguishing of. C. Pasqualini 269
Wave-Functions, Spheroidal. J. W. Nicholson 992
,, of Compression in Reinforced Concrete Conduits, Velocity of Propagation of. de Sparre 2218
,, Resistance—the Effect of Varying Draught. T. H. Havelock 2217
Weber's Formula for Calculation of the Deviation of Luminous Rays, Application of. Fournier 295
Whirling Speeds of Shafts carrying Concentrated Masses. R. C. J. Howland.. 1801
Wind-Channels in Aero-dynamics. N. K. Bose 1804
Windage Losses in Air, Hydrogen and Carbon Dioxide. C. W. Rice 2010
Windmills, Performance of. L. Breguet 2216
Young's Modulus for Rods, Optical Interference Method of Measuring. G. F. C. Searle 2

Elasticity (*see also* section Metallography).

Adhesives and Adhesive Action. J. W. McBain and D. G. Hopkins 1297
Aluminium Crystals, Plastic Extension and Fracture of. G. I. Taylor and C. F. Elam 2415
Bent Rods, Breaking Strain of, under Elastic Tensions. H. Zimmermann 759
Brass Tubes, Method for Measuring Internal Stress in. R. J. Anderson and E. G. Fahlman 758
Celluloid, Use of, in Optical Method for Observing Strains in Structures. M. Wächtler 82
Copper Bars, Approximate Determination of Depth of Compression in, during Impact. E. W. Tschudi 2420
Cotton Industry, Physical Research in. A. E. Oxley 9
Deformability and Applicability of Surfaces. B. M. Sen 4
Elastic After-effect and Plasticity. R. Becker 2211
,, ,, -working and Hysteresis. K. Bennewitz 1
,, ,, , Hysteresis, and Internal Friction. H. Jordan 748
,, Body, Volume Change of. G. Masing 754
,, Distortion appertaining to Certain Practical Problems, New Type of. P. Bonanno 266
,, Distortions, Contribution to Theory of. P. Bonanno 264
,, Lattice Structures, Equilibrium of. O. Sesini 263
,, Stability, Theory of. W. R. Dean 1797
,, Waves along Boundary of Two Solids, Propagation of. R. Stoneley.. 273
Elasticity. J. Czochralski 747
,, in "Tensorial" Form Valid for any Given Coordinates, Laws of. L. Brillouin 2419
,, , Tensor Analytical Representation of Theory of. H. Thirring..... 2417
Impact, Inelastic. O. Heimstädt 1796
Membrane, Stretched, with Particular Law of Density, Vibration of. E. L. Ince 1800
Membranes, Non-planar, Tension and Elastic Deformation of. M. Lagally .. 749
Metallic Crystals, Flow Resistance of. O. Haase and E. Schmid 2222
Natural Isotropic Solid, Equations of State of Plastic Phase of. M. Brillouin 752
Newton's Coefficient of Restitution and Law of Oblique Impact, Method of Measurement of. H. G. Green 2011
Nickel Steels near Point of Transformation, Elastic Tension and Magnetic Behaviour of. W. del Regno 959
Photo-elastic Constants of Glass as affected by High Temperatures and by Lapse of Time. F. C. Harris 755
,, -elasticity. E. G. Coker 1867
Pianoforte Hammer, Elastic Impact of. S. Bhargava and R. N. Ghosh 997
Planck's Law, Light Quanta and Coherence. A. Landé 2546
Plastic Bodies, Sliding and Dividing Surfaces of Equilibrium States of, and Elastic After-effects of Deformed Bodies. A. Nádai 751
,, Deformation of Iron and Formation of Neumann Lines. W. Rosenhain and Jean McMinn 2212

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Elasticity (*see also* section Metallography), *continued.*
Plastic Deformation of Metals, Effect of Free Surfaces on. F. C. Thompson and W. E. W. Millington 753
,, Deformations, Application of Theory of Elasticity to. E. Hungerer and J. Koenigsberger 1543
,, Extension of Metals, Heat developed during. W. S. Farren and G. I. Taylor 1764
Repeatedly Reversed Stresses, Materials under. L. Jannin 750
Rochelle Salt Crystal, Relation between Mechanical and Piezoelectrical Properties of. F. C. Iseley 665
Rock-salt and Sylvine at Low Temperatures, Determination of Elasticity and Torsion Coefficients of. T. Steinebach 2416
,, under Water, Plasticity and Strength of. W. Ewald and M. Polányi 8
,, , Natural, Strength and Elastic Limits of. A. Joffé and M. Lewitsky 1298
,, , ,, , Tensile Strength and Elastic Limits of. W. Ewald and M. Polányi 1798
Rotating Bodies, Symmetrical Axial Deformation of. A. Timpe 760
Rubber, Steel and other Materials, Examination of Elastic Properties of. L. Hock 1295
Ships' Hulls, Strains in. G. M. Pugno 267
Static Elasticity, General Solution of Problem of. G. Somigliana 262
Statical Problems of Elasticity, Application of Variational Equations to. A. Ono 265
Stressed Solid Bodies, Slip Bands in. A. Nádai 10
Tensile Strength, Temperature and Cold Work in Some Pure Metals and Solid Solutions, Relationship between. D. H. Ingall 756
,, Testing, Recent Developments in. J. V. Howard and S. L. Smith 996
Thick Plates, Elastic Deformation of. C. A. Garabedian 1296
Time Comparisons by Coincidence. J. P. Henderson 1784
Torsional Vibrations in Air at Reduced Pressures, Damping of. R. V. Wagner 271
Tungsten Single Crystals under Tensile Stress, Studies on Deformation of. Research Staff of the General Electric Co., London 20
Vibrating String, Forces at Ends of. W. H. George 1299
Vibrations, *see also* sections Sound and Dynamics.
Young's Modulus at High Temperatures, Variation of. J. P. Andrews 1799
,, ,, for Rods, Optical Interference Method of Measuring. G. F. C. Searle 2
Zinc, Tenacity of, by Cold Treatment. G. Masing and M. Polányi 261

Electrolysis.
Acetates and Trichloracetates, Electrolysis of Mixtures of. R. E. Gibson 985
Acids, Undissociated, Nature of. H. v. Halban 830
Actinometers with Electrodes coated with Silver Iodide and Copper Oxide, Sensitivity of. G. Athanasiu 2672
,, with Mercury Electrodes, Sensitiveness of. G. Athanasiu 1525
Activity Coefficients. E. Wilke and O. Kieninger 2631
Alkaline Earth Chlorides, Activity Coefficients and Transference Numbers of. W. W. Lucasse 1771
Alkyl Groups, Electrolytic Introduction of. J. M. Nelson and A. M. Collins .. 460
Alkyloxyacids, Electrolysis of Salts of. D. A. Fairweather 1781
Alloys and Amalgams of Manganese, Electrolytic Formation of. A. N. Campbell 715
Ammonia, Liquid, Electronegative Potential Series in. F. W. Bergstrom ... 2195
Ammoniacal Zinc Carbonate Solutions, Electrolysis of. T. P. Campbell 2800
Analysis, Separation, and Estimation (Electrolytic), *see* section Electrolytic Analysis.
Annealing of Electrolytic Iron in a Vacuum. R. Hugues 2388
Anode Processes, Various, (Formation of Bichromates, Persalts, Chloroform, etc.) Laboratory Apparatus for. I. Stscherbakoff 2634
Anodic Purification of Mercury. E. Brummer and S. v. Náray-Szabó 1528
Beryllium, Electrolytic Production of. B. S. Hopkins and A. W. Meyer 1275
,, , Metallurgy and Alloys of. E. A. Engle and B. S. Hopkins 1276
Brass, Corrosion of, as affected by Grain Size. R. J. Anderson and G. M. Enos 979
Cadmum and other Metals, Electrolytic Deposition of, on Aluminium. C. H. Desch and (Mrs.) E. M. Vellan 2804
Calcium Amalgam, Electrolytic, from Aqueous Calcium Hydroxide. A. Eilert 1779
Arsenate, Electrolytic. S. J. Lloyd and A. M. Kennedy 2407

For the **Explanation** of this Index see p. 947.

Electrolysis, *continued.* Abstract Nos.
Calomel Electrode, Preparation of Electrolytic Mercurous Chloride in Saturated Potassium Chloride for Use in. W. W. Ewing 1529
Catalysis of H_2O_2 by Iron Salts. E. Spitalsky and N. Petin 711
Catalytic Surface, Theory of. H. S. Taylor 1768
Cataphoresis of Gas Bubbles in Water. T. Alty 242
Chlorine and Caustic Soda, Electrolytic Production of. H. J. Payne 26B
Cobalt and Nickel-plating Baths. Use of the Oxygen Electrode. G. H. Montillon and N. S. Cassel 975
,, ,, ,, Triacetates, Electrolytic Production of. C. Schall and H. Markgraf 976
Concentration Cells in Methyl Alcohol. J. Grant 1261
Contact Catalysis, Third Report of Committee on. H. S. Taylor 454
Copper-Extraction Process, Greenawalt. W. E. Greenawalt 978
,, Salts, Concentration and Polarisation at Kathode during Electrolysis of Solutions of. W. L. Miller 2200
,, Sulphate Solutions, Purification of. G. S. Tilley and O. C. Ralston 1526
,, Zinc Alloys from Cyanide Solutions, Electrolytic Deposition of. R. Carl 1532
,, , Antimony, Lead and Tin, Electrolytic Separation of. A. Lassieur 459
Corrosion by Electrolytic Concentration Cell. R. J. McKay 1231
,, of Underground Pipe Lines. K. H. Logan 346B
,, , Electrolytic Theory of. F. N. Speller and F. G. Harmon 2774
Crystals, Electrolysis of. P. Lukirsky, S. Ščukareff and O. Trapesnikoff 1780
Current-Voltage Curves for Nickel and Aluminium. E. Liebreich and W. Wiederholt 1271
Decomposition Potentials, Measurement of. A. L. Ferguson and G. van Zyl . 940
Dielectric Constants of Aqueous Solutions on Temperature, Dependence of. L. Kockel 2757
Dissociation of Electrons and Electrochemical Normal Potential, Relationship between Work of. A. Güntherschulze 1705
Electric Field of Ions and Neutral Salt Action. P. Debye and J. McAulay 1527
Electrical Layer Farthest Away from Surface of Solution in Contact with Air or Metal, Sign of. R. D. Kleeman and C. R. Pitts 1987
Electro-Chemical Deposits, Structure of. R. Audubert 726
Electrodeposition of Metals, Relation between Polarisation and Structure in. V. Kohlschutter 1277
Electro-Endosmosis. Part I. F. Fairbrother and H. Mastin 1263
,, . Part II. F. Fairbrother 1264
,, . Part III. F. Fairbrother and H. Mastin 1530
Electro-osmotic Experiments on Intensity of Absorption of Constituent Ion by an Insoluble Salt. Part I. J. N. Mukherjee and H. L. Ray 1500
Electrode Potentials and Polarisation, Method of Studying. H. D. Holler 1997
Electrolysis with Gas Kathode. A. Güntherschulze 1782
Electrolyte Solutions, Dilute, Surface Tension of. C. Wagner 741
Electrolytes, Conductivity of. C. W. Davies 1778
,, , ,, , II. Mobility of Hydrogen Ion at 25° C. III. Correlation of Strong and Weak Electrolytes. C. W. Davies 2798
,, , Dielectric Constants of. H. Ulich 2758
,, , ,, ,, . P. Walden, H. Ulich and O. Werner 2359
,, , ,, ,, of Solutions of. P. Walden, H. Ulich and O. Werner 1730
,, , Strong, Activities of. G. Scatchard 1770
,, , ,, , Activity of. IV. Application of the Debye-Hückel Equation to Alcoholic Solutions. G. Scatchard 2638
,, , Weak, in Water-Alcohol Solutions, Dissociation of. L. Michaelis and M. Mizutani 2192
Electrolytic Conductivity, Theory of. O. Redlich 1531
,, Double Layer, Theory of. O. Stern 723
,, Polarisation, Part I. Kathodic Overvoltage of Lead. S. Glasstone 462
,, ,, , Part II. Kathodic Overvoltage of Mercury. S. Glasstone 1272
,, ,, , Part III. Diffusion Layer. S. Glasstone 2795
Ferrous Metals, Electrolytic Corrosion of. W. M. Thornton and J. A. Harle .. 2779
Fescolising: New Method of Electro-Chemical Deposition of Metals 27B
Filtration, Electromotive Force of. L. Riéty 2632
Fluorine, Preparation of. J. Simons 463

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Electrolysis, *continued.*
Gelatine, Amphoteric Character of. P. K. Frölich 2802
Gold Oxidation, Anodic. F. Jirsa and H. Jelinek 729
Halogen Hydracids in Methyl and Ethyl Alcohol, Conductivity and Catalytic Action of. H. Goldschmidt and P. Dahll 931
Hydrazine, Electro-Chemical Behaviour of. New Electro-capillary Effect. S. Bodforss 239
Hydrocarbons, Aromatic, Electro-Chemical Oxidation of. F. Fichter 962
Hydrogen Electrode and Hydrochloric Acid, Influence of Neutral Salts on Potential Difference between. L. Michaelis and M. Mizutani 238
,, ,, , Experimental Studies on. H. T. Beans and L. P. Hammett 1996
,, -ion Concentration, Measurement of. E. B. R. Prideaux 1270
Hypochlorite Solutions, Electrolysis of. F. Foerster 2801
Industrial Electrolysis, Plating and Refining, *see* Section B.
Inorganic Electrolytes, Statistics of Surface Charges in Solutions of. W. Wessel 2197
Ions, Hydration of. A. Gyemant 977
,, , Mechanism of Adsorption of. R. Audubert and Marguerite Quintin 1758
Iron Alloys, Corrosion of, by Copper Sulphate Solution. C. M. Kurtz and R. J. Zaumeyer 2780
,, and Nickel, Electrodeposited, Introduction of Carbonaceous Matter in. P. K. Frölich 2807
,, , Electrolytic, Progress in. D. Belcher 986
Kathodic Supertension of Hydrogen and Metals, Influence of Colloids upon. C. Marie and G. Lejeune 220
Liquids, Dielectric Constants of. H. Harris 2357
Magnetochemical Effects. A. Schükarew 731
Manganese, Electrodeposition of. Part II. A. J. Allmand and A. N. Campbell 1278
Mercury against its Ions in Aqueous (1) Methyl Alcohol, (2) Acetone, and (3) Pyridine, Electrode Potential of. J. Ghosh, P. R. Chaudhuri and A. Sen 1480
,, Drop Kathode, Electrolysis with. J. Heyrovský 1269
Metal Cleansing with Alkaline Cleaning Solutions. E. M. Baker and R. Schneidewind 1252
Metallic Colloids, Conductivity of, and its Electro-technical Applications. H. André 2635
Metanilic Acid and its Commercial Possibilities, Electrolytic Preparation of. A. K. Doolittle 1274
Mixed Electrodes, Formation of, at Phase Boundaries. K. Horovitz 2191
Negative and Positive Catalysis and Activation of Molecules. N. R. Dhar... 230
Nickel, Dissolution of, in Sulphuric Acid under Influence of Alternating Current. A. P. Rollet 2633
,, , Influence of Acidity upon Galvanic Polarisation of. S. Triandafil.... 1998
Nitrobenzene with Mercury-dropping Kathode, Electrolysis of. M. Shikata.. 2805
Organic Electro-Chemistry, Applied, Present Status of. C. J. Thatcher 1534
,, Liquids, Effect of Pressure on Dielectric Constant of. M. Grenacher 2358
Overvoltage and Surface Forces at Lead Kathode. S. Glasstone 2796
,, and Transfer Resistance. E. Newbery 1776
,, of Hydrogen at Arsenic Kathodes. Electromotoric Behaviour of Arsenic Hydride. G. Grube 724
Passivity. H. Gerding and A. Karssen 1989
,, of Metals, Electronic Theory of. U. Sborgi 1990, 1991
Perborates, Formation of, by Electrolysis with Unsymmetrical Alternating Current. S. Bodforss and A. Arstal 1266
Photovoltaic Elements with Fluorescent Liquid, Surface Phenomena in. A. Grumbach 1772
Platinum, Hydrogen Electrode Function of. K. Horovitz 728
p-Nitrotoluene and *p*-Chlorotoluene to their Respective Acids, Electrolytic Oxidation of. R. F. Dunbrook and A. Lowy 1273
Polarisation Capacity and Electrical Double Layers. A. L. Clark 983
,, in Metal Deposition, Influence of Alternating Currents upon. N. Isgarischew and Sophie Berkmann 1783
,, , Dielectric. L. Ebert 730
,, (Electrolytic), *see also* separate section.
Polarised Electrodes, Effect of Small Alternating Currents on. S. Glasstone 1995
Potassium Iodide in Bromine-Iodine Solutions, Electrical Conductivity of. W. Plotnikoff 2189

. For the **Explanation** of this Index see p. 947.

Abstract Nos.

Electrolysis, *continued.*

Potassium Oxalate with Tin Anode, Electrolysis of. F. H. Jeffery 1265
Potential Differences, Thermodynamical, at Boundary of Two Liquid Phases. S. Wosnessensky 2190
,, of Alkali Metals Measured by Decomposition Voltages of Alkali Chlorides, Bromides and Iodides. B. Neumann and H. Richter 2198
,, of Metals of Alkaline Earth Group and of Rare Earth Metals. B. Neumann and H. Richter 2199
Quinhydrone Electrode, Thermodynamics of, and Chemical Constant of Hydrogen. E. Schreiner 2794
Rectifier, Electrolytic, *see also* section Polarisation (Electrolytic).
Salicylic Aldehyde, Electrolytic Preparation of. K. S. Tesh and A. Lowy ... 981
Sediments and Solutions of Electrolytes in Contact with Them, Electrokinetic Relations between. R. Labes 2194
Selenium Hydrosols and other Hydrosols, Conditions of Precipitation by Electrolytes of. J. J. Doolan 1533
Separation, Electrolytic, of Copper, of Antimony and of Bismuth from Lead. A. Lassieur 241
Sodium by Electrolysis through Glass. R. C. Burt 2803
Solid Electrolytes, Migration of Ions in. M. le Blanc and M. Kröger 2405
,, ,, , ,, ,, . C. Tubandt and H. Reinhold 1775
,, ,, , Wandering of Ions in. G. C. Schmidt 240
Solvation, Electrode Potentials and Free Energy of. J. Heyrovský 1994
Steel, Zinc-plated, Brittleness of. H. Sutton 2806
Strong Electrolytes, Ionisation of. W. H. Rodebush 721
,, ,, , Theory of Concentrated Aqueous Solutions of. E. Hückel 1267
Sulphuric Acid, Passage of Alternating-Current through. R. T. Lattey 2598
Superposed Alternating-Current, Effect of, on Anodic Solution of Gold in Hydrochloric Acid. A. J. Allmand and V. S. Puri 2799
Temperature Coefficient and Mechanism of Chemical Reaction, Relation between. F. O. Rice, C. F. Fryling and W. A. Wesslowski..... 449
,, Dependence Parameter, Statistical Consideration of, and Debye Theory of Electrolytes. P. Gross and O. Halpern 2321
Tension of Electrolytic Solution, Physical Significance of. J. Heyrovský 2196
Thermocurrents in Electrolytes. J. Thiele 1777
Thermodynamics of Solutions of Certain Simple Electrolytes. H. S. Harned 2406
Transference Numbers of Sodium and Potassium Chlorides and of their Mixtures. Jane Dewey 2628
,, ,, of Solutions of Mixed Chlorides. D. A. MacInnes 2627
,, ,, , Moving Boundary Method for Determining. Part III. Novel Form of Apparatus. D. A. McInnes and T. B. Brighton.. 1773
,, ,, , Moving Boundary Method for Determining. Part IV. Transference Numbers of Some Chloride Solutions. E. R. Smith and D. A. McInnes 1774
Tungsten and some of its Alloys, Preparation of. L. Kahlenberg and H. H. Kahlenberg 2808
,, , Electroplating, on Iron. C. A. Mann and H. O. Halvorsen 974
Viscosity and Electrolytic Conductivity, Variation of, with Temperature. M. Wien 2797
Volta-Effect between Metal and Electrolyte. J. Guyot 971
Wood's Active Hydrogen. K. F. Bonhoeffer 709

Electrolytic Analysis.

Actinometers with Electrodes coated with Silver Iodide and Copper Oxide, Sensitivity of. G. Athanasiu..... 2672
,, with Mercury Electrodes, Sensitiveness of. G. Athanasiu..... 1525
Barium and Strontium Amalgam Electrodes. P. S. Danner 719
Bubbles, Small, of Gas in Water, Property of. H. A. McTaggart 972
Colloidal Solution, Quantitative Study of Protection attained in, by Introduction of Electrolyte in Quantity insufficient to produce Coagulation. A. Boutaric and G. Perreau 1761
Electro-Chemical Polarisation and Electrode Reactions. E. Spitalsky..... 720
,, Potential Measurements, Simple Apparatus for. M. Tréne . 713
Electrodes of Platinum and Platinum Alloys in Electrometric Analysis, Behaviour of. (1) Dissimilar Electrodes. R. G. van Name and F. Fenwick 1268
Hydrogen and Oxygen Electrode Titrations of some Dibasic Acids and of Dextrose. H. T. S. Britton 2636

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Electrolytic Analysis, *continued.*
Hydrogen-ion Concentrations with Glass Electrodes, Measurement of. W. E. L. Brown 725
Hydrolysis, Electrometric Study of. P. Job 968
Isoelectrical Points. R. Kuhn 984
Liquid Chains, Thermodynamics and Kinetics of. H. Schiller 717
,, Potentials at Boundary of Alkali Solutions. R. Fricke and C. Rohmann 712
Nickel-depositing Solutions, Conductivity of. L. D. Hammond 980
Non-Noble Radio Elements, Electrolytic Separation of. F. Tödt 722
Oxygen, Electrolytic Evolution of, on Anode Polarisation. F. Jirsa 718
Ozone, Electrolytic Preparation of. G. Malquori 973
Peroxides and Peracids in Electro-Chemical Oxidation of Organic Compounds. F. Fichter 964
Polarised Electrodes, Commutator Measurements on. M. Knobel 982
Potentiometric Titration, New Method of. E. Zintl with experiments by A. Rauch 2637
Sugar, Hyrolysis Constant of. H. Colin and (Miss) A. Chaudun 969

Electromagnetic Theory.
Advanced Potentials and Atomic Models. L. Page 176
Ampère Trough Experiment. F. W. Grover, J. P. Das and J. H. Turnbull .. 1701
Axial Galvano- and Thermomagnetic Effects. A. Sellerio 2356
Barlow's Wheel. A. Carrelli 913
Bucherer's Experiment, New Discussion of. U. Doi 1563
,, ,, ,, ,, . G. A. Schott 2231
,, Experiments on e/m, Interpretation of Results of. T. Lewis 1562
Colloidal Particles of Order of 10^{-5} cm., Individual Radio-active, Electrical Behaviour of. F. Ehrenhaft 1913
Conductor, Single Straight, as New Fundamental. C. Hering 690B
Cylindrical Magnet through which a Current is Passing, Torque on. J. Zeleny and L. Page 633
Double Layer and Vortex Line, Theorem of Equivalence of. C. de Jans 914
Eddington's Natural Unit of Field, and Possible Relations between it and Universal Constants of Physics. J. Rice 1569
Electric Charge, Motion of. A. Bramley 1700
Electromagnetic Field and Atomic Radiation, Affine Asymmetrical Theory of. H. Eyraud 1937
,, Fields, Derivation of, from Basic Wave-Function. H. Bateman and P. Ehrenfest 632
,, Law, New. Ferrier and L. Besnerais 1444
,, Laws and Quantum Theory. H. A. Senftleben 1699
,, ,, , C. Hering's Demand for Revision of. A. Liénard 631
,, Phenomena, Effect of Gravitational Field upon. W. Alexandrow 2232
,, Waves along Wires. G. Laville 199
,, ,, at Hertzian Lattices, Reflection of. W. Arkadiew .. 197
Electrolytic Trough to imitate Electrical Field of Conductors, Use of. W. Zschaage 1553B
Electron, Free, in Field of Plane Electromagnetic Wave, Motion of. J. Frenkel 1671
,, , Intrinsic Frequency of. L. de Broglie 1561
,, , Theory of. H. Reissner 1827
Electrostatics, New. H. Bateman 1162
Heaviside's Operators in Engineering and Physics. E. J. Berg 352B
Hertzian Waves in Solids near Point of Fusion, Dispersion of. J. Errera 918
Iron, Galvano-Magnetic Experiment upon. G. Polvani 912
Kinematics. C. L. R. E. Menges 1614
Light, Structure of. J. J. Thomson 1938
Linear Conductors, Theory of rapidly varying Electromagnetic Processes in. R. Schachenmeier 1159
Magnetic Field of Moving Electron. F. Guéry 399
Metallic Conduction and Scattering of Electrons by Atoms, Kinetic Theory of. E. L. Davies and G. H. Livens 1724
Motion of Electricity in Metals. H. A. Lorentz 2556
Point-Electrons, Electrodynamics of. J. Frenkel 1826
Poynting Flux in gradually varying Dielectric. J. A. Wilcken 1160
Quadratic Form for Radial Acceleration. R. Hargreaves 14

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Electromagnetic Theory, *continued.*

Quanta and Electric Forces. J. H. Jeans 1560
,, , Electromagnetic Theory of. F. R. Bichowsky 2443
Quantum Magnetic Tubes in Rotation. H. S. Allen 1976
Reeves Experiment, Remarks on. S. Ray 2555
Residual Charge, Variation of, and Ratio of Electrical Conductivity to Capacity due to Temperature. H. Saegusa 916
Shielding of Electric and Magnetic Fields. J. H. Morecroft and A. Turner ..1699B
Structure of Light, Suggestion as to. J. J. Thomson 177
Vector Power, Continuity of, in Alternating Electric and Magnetic Field. H. Nukiyama 1939

Electro-Physiology and Electrotherapeutics, Radio-Therapy and Radiography.

Constant Voltage High-tension Generators C. E. S. Phillips 2369
Continuous Current, 500,000-volt, New Generator of. d'Arsonval, with remarks by J. Perrin 1981
Current Rectifiers, Extra-high-pressure, for Radiology. E. P. Vanoni 2765
Deep Therapy, Homogeneity of Dosage, in Quantity and in Time. M. Joly .. 684
Electro-cardiographs, Significance of. F. Henrijean 1982
Liver, Influence of Radium upon Catalysis of. A. Maubert, L. Jaloustre and P. Lemay 1980
Natural and Artificial Sunlight in Health and Disease. C. W. Saleeby 2368
Photoelectric Effect produced by Ultra-violet Rays in Man. J. Saidman.... 1751
Radiation Therapy, Simple Accessory in. P. A. Schultz 685
Radio-dermites and Neoplasms, Limitations of Antagonistic Action of Spectra and Application of Long Wave-length Radiations in Treatment of. J. Risler and P. Mondain 1749
Radiology, Influence of, upon our Conceptions of Disease. T. Horder 430
Radio-therapy, Deep, Developments in. N. S. Finzi 1750
Radium Tubes and Applicators, Experimental Methods for Testing Leakage of Emanation from. G. Barlow and H. B. Keene 1419
Rectifier for Radiological Applications. G. Rebora 559B
Stereoscopic Micro-radiography in Relief and Pseudo-Relief. P. Goby 1627
Ultra-violet Rays, Absorption of, by Skin and its Therapeutical Applications. J. Saidman 1090
Waves, Short, Propagation of, in Living Tissues. A. Chaulard 1498
X-Ray Burns, Acute. G. T. Loughborough 2371
,, Fluorescent Screens, Photometry of. L. A. Levy and D. W. West ... 2613
,, Rooms arranged for Private Radiologists, Organisation and Equipment of. R. C. Rodgers 2370
X-Rays in Industrial Control. H. Pilon 2302

Freezing-, Melting-, and Boiling-points.

Aniline and its Aqueous Solutions, Physical Properties of. M. P. Appleby and P. G. Davies 2409
Boiling-points of Mixtures of Water, Benzene and Ethyl Alcohol under Pressure of 760 mm. Mercury. J. Barbaudy 2313
Cryoscopic Measurements with Benzene. E. R. Jones and C. R. Bury 2723
Cupferron, Salts of. (Miss) V. Auger, L. Lafontaine and C. Caspar 1521
Ebullioscopic Measurements in Mixed Solvents. B. H. Carroll, G. K. Rollefson and J. H. Mathews 2315
Freezing-points of Hydrofluoric Acid. J. D. C. Anthony and L. J. Hudleston 2316
Graphite, Fusion and Evaporation of. E. Ryschkewitsch 1432
,, , ,, and Heat of Evaporation of. K. Fajans 1433
Hydrogen Fluorite, Preparation, Freezing-point, and Vapour-pressure of. J. Simons 387
Micro-Melting Point Apparatus. J. F. Clevenger 155
Molybdenum, Temperature Scale and Melting-point of. A. G. Worthing 2307
Simple Compounds and Different Varieties of Solid State, New Properties of. E. Friederich 1811
Spectro-Micropyrometer and Optical Observation of Melting-points of Pt and other Metals. F. Henning and W. Heuse 598
Thermoelectric Condition of Pure Iron at its Transition Points. A. Goetz ... 659
Vapour arising from a Solution, Temperature of. W. Möbius 1434

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Gases and Vapours (*see also* section Thermodynamics).
Activated Hydrogen, Condensation and Re-evaporation of. F. Paneth 615
Air Waves of Finite Amplitude. W. B. Morton and Amy I. Woods..... 161
Boyle's Law, New Design for Apparatus to Measure Coefficient of Deviation from, and Determination of this Coefficient for Acetylene. J. T. Howarth and F. P. Burt 2123
Cooling a Gas prior to Compression. G. Patart 1147
Critical Pressure-ratio for Gases as affected by Variable Specific Heat. W. J. Walker 160
Detonation, Limits of, in Explosive Gas Mixtures. R. Wendlandt 2551
Dew-points of Fuel-Air Mixtures, Method of Determining. R. J. Kennedy.... 2722
Diamagnetism of Gases, New Phenomenon in. A. Glaser 607
Diffusion of Certain Alkali Salt Vapours in Bunsen Flame, Coefficients of. G. E. Davis 601
Dispersion of Energy in a Standard Aggregate of Gases. Ippisch 2727
Electric Moment of Gaseous Molecules of Halogen Hydrides. C. T. Zahn ... 608
Entropy and State Probability of Perfect Gas. F. v. Hauer 1697
,, of Condensed Gases. A. Eucken and F. Fried 157
,, ,, ,, at Absolute Zero, Criticisms of Eucken's Work on. F. Simon 1438
,, ,, ,, Reply to Criticism of F. Simon on. A. Eucken and F. Fried 1698
,, of Gases and Theory of Quanta. II. Chemical Constant of Monatomic Gases. A. Schidlof 156
,, of Real Gases, Absolute Value of. Part II. V. Njegovan 1152
Equation of State for Gases and Molecular Association. A. Leduc 1436
Ethyl Ether, Liquid, at 0° and 12°, Specific Heat and Heat of Vaporisation of. F. G. Keyes and J. A. Beattie 154
Evaporation, Kinetic Theory of. D. B. Macleod 2120
Flame in Inflammable Gas-Air Mixtures, Limits for Propagation of. Mixtures of Air and One Gas at Ordinary Temperature and Pressure. A. G. White 600
,, ,, ,, ,, ,, ,, ,, ,, ,, Effect of Temperature on Limits. A. G. White 1689
Flow of Gases at High Pressures, Pressure Governors for Controlling. J. S. G. Thomas 604
Gas-Analysis Apparatus, Multiple. M. N. J. Dirken 603
,, Equations, Validity Ranges of. I. W. Herz 898
,, Flows through Capillary Tube and Reynolds' Criterion. J. Satterly 745
,, Mixture, Effect of Molecular Attractions on Total Pressure of. O. Maass and D. M. Morrison 899
,, Ignition by Electric Sparks, Thermal Theory of. J. D. Morgan..... 1468
,, , Theory of, and Equation of State. J. Duclaux 611
Gaseous Combustion at High Pressures. Part V. The Explosion of Hydrogen-Air and Carbon Monoxide-Air Mixtures at Initial Pressures up to 175 Atmospheres. W. A. Bone, D. M. Newett and D. T. A. Townend . 2403
,, Mixtures, Effect of Radiation on. H. Senftleben 2323
,, ,, , Thermal Separation in. G. A. Elliott and I. Masson 2322
Gases, Elements of Kinetic Theory of 2729
,, , Ignition of. Part V. Ignition by Inductance Sparks of Paraffin-Air Mixtures. R. V. Wheeler 1145
,, , Thermic Slip in. M. Czerny and G. Hettner 900
Haber Equilibrium Data, Representation of, by Equation. L. J. Gillespie .. 1693
Heat-Content of Certain Condensed Gases, Determination of. A. Eucken and E. Karwat 609
Heating Value of Gas, Measurement of. C. V. Boys 394
Helium Gas and its Uses. J. C. McLennan 393
,, , Joule-Thomson Effect for. J. H. Perry 901
,, , Static Model for. H. S. Allen 792
Hydrogen Fluoride, Gaseous, Density and Molecular Complexity of. J. Simons and J. H. Hildebrand 388
,, Fluoride, Preparation, Freezing-point and Vapour-pressure of. J. Simons 387
Isothermals of Gases between 400° C. and — 183° C. L. Holborn and J. Otto 2549
Isotherms of Helium, Nitrogen and Argon below 0°. L. Holborn and J. Otto 1146
Joule-Effect for CO_2, Recent Measurements of. F. G. Keyes and F. W. Sears 1435
Koehler Safety-Lamp, Use of, in Testing Tanks for Combustible Gases or Vapours. R. E. Wilson and R. E. Wilkin 602

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Gases and Vapours (*see also* section Thermodynamics), *continued.*
Liquid Air in Low-pressure Work, Substitute for. F. E. Poindexter 390
Magnetic Susceptibility of Helium, Neon, Argon and Nitrogen. L. G. Hector 425
Methane, Thermal Decomposition of. R. C. Cantelo 606
Micro-Gas Analysis, New Method of. L. Reeve 395
Molecular Diameters. H. Sirk 1819
,, Fields, Determination of. I. Variation of Viscosity of Gas with Temperature. J. E. Jones 288
,, ,, , ,, . II. Equation of State of a Gas. J. E. Jones 289
,, Heats of Gases, especially of Ammonia, Methane, and Hydrogen, at Low Temperatures, Temperature Dependency of. F. A. Giacomini ... 2122
Oxygen, Density of. G. P. Baxter and H. W. Starkweather 734
Perfect Gas, Definition of. A. L. Clark 897
,, ,, , Monatomic, Quantum Theory of. A. Einstein 159, 1439
,, ,, , Quantum Theory of. A. Einstein 1440
Potassium as Mercury-Vapour Trap. A. L. Hughes and F. E. Poindexter.. 2311
Pressure Equations for Liquid and Vapour Mixtures and their Application to Air. V. Fischer 613
,, Gauge, Pfund's, Study of. R. T. Cox 396
Quantising Systems containing Identical Elements. E. Fermi 162
Quasi-neutral Electric Diffusion in Gas, at Rest or Flowing. W. Schottky and J. v. Issendorff 1464
Radiation, Infra-red, and Combustion Rate of Gases. W. T. David 2548
,, Quanta and Ideal Gas Theory. A. Schidlof..... 1083
Simple Gas Laws, Graphical Treatment of. B. Eck and E. Kayser 2121
Steady Flow of a Gas in Two Dimensions. S. Lees 158
Superheated Vapours, Specific Heat of. R. Plank 149
Supersaturation of Gases in Liquids. F. B. Kenrick, K. L. Wismer and K. S. Wyatt 605
Temperature-entropy Diagrams for Nitrogen and Oxygen. W. H. Rodebush, J. W. Andrews and J. B. Taylor 1437
,, Gradient in Gases at Various Pressures. W. Mandell and J. West 1144
Thermal Diffusion Measurements. T. L. Ibbs 1690
Thermodynamic Temperature of Gas, Kinetic and Electromagnetic Definitions of. E. Wertheimer 2124
Trouton's Law at Absolute Zero of Temperature. N. Perrakis 1691
Vaporisation and Chemical Changes on the Surface of Contact of Two Fluids, Time-Rates of. S. Sano 1515
Vaporised Salts in Flames, Conductivity of. S. Kalandyk 652
Vapour arising from a Solution, Temperature of. W. Möbius 1434
,, Pressure, *see* separate section.

Gravitation.

Bucherer's Experiment, New Discussion of. U. Doi 1563
,, ,, ,, ,, . G. A. Schott 2231
,, Experiments on e/m, Interpretation of Results of. T. Lewis 1562
Dynamical Theory of Gravitation, *see also* section Dynamics.
Eddington's Natural Unit of Field, and Possible Relations between it and Universal Constants of Physics. J. Rice 1569
Einstein Effect and Deflection of Light, *see also* sections Astronomy and Relativity.
Einsteinian Fields, Axially Symmetrical, Theory of. P. Straneo 1330
Einstein's Law of Gravitation, Elementary Deduction of. T. Shimizu 2235
Electrified Spherical Corpuscles. L. Décombe 787
Electromagnetic Phenomena, Effect of Gravitational Field upon. W. Alexandrow 2232
Equivalence on Theory of Relativity, Principle of. T. Y. Thomas 795
Gravitation and Principle of Action and Reaction. G. Maneff 1572
,, ,, ,, ,, ,, ,, , Criticism of Paper of G. Maneff. K. Popoff 2026
,, ,, ,, ,, ,, ,, , Objections of A. H. Bucherer and of K. Popoff to. G. Maneff 2233
,, and Radiation, Theory of. W. Gore 296
,, , New Experiments in. C. F. Brush 486

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Gravitation, *continued.*

Gravitational Electromagnetic Field, Riemannien Projective Nature of. H. Eyraud 1010
,, Field of Moving Mass Point and Dynamical Problem of Two Bodies on Einstein Theory. J. Kudar 1832
,, ,, , External and Internal Densities. M. Brillouin 1833
,, Fields, Binary, Theory of. G. Beck 2441
Gravity at Sea, Problem of Measuring. W. G. Duffield 798
Infinitely Weak Field in Einstein's Theory of Gravitation, Problem of. K. Lanczos 1571
Jaumann's Theory of Gravitation with Observations, F. Schenner's Comparison of. E. Lohr 1011
Lunar Phenomena and Gravity. F. Sacco 313
Mechanics and Einstein Invariance Principle. A. H. Bucherer 2234

Inductance (Self and Mutual).

Coils for Radio Use, Systematic Study on Self-capacity of. I. Yamamoto....1057B
,, of Rectangular Cross-Section, Calculation of Inductance of. H. Hemmeter 208
,, Wound on Rectangular Frames, with Special Reference to Calculation of Inductances, Study of. Y. Niwa 943
Inductance and Capacity, Method of Comparing. T. B. Vinycomb 2596
Induction Coil, Effect of Capacity on. J. A. Crowther and R. J. Stephenson 1974
,, Coils, Experiments on. J. A. Crowther 1973
Krarup Conductors, Measurements on. U. Meyer..... 938
,, Lines, Properties of. U. Meyer.....1484B
Measurements, *see* separate section.
Mutual Inductance of Circuits with Circular Symmetry about a Common Axis, Tables for Calculation of. F. W. Grover 1738
,, ,, of Two Coaxial Circles, Formulæ, Tables and Curves for Computing. H. L. Curtis and C. Matilda Sparks..... 942
,, Inductances at Telephonic Frequencies, Comparison of. L. Hartshorn 1737
,, Induction of Two Coaxial Coils, Determination of Coefficient of. J. Hak..... 1491
Self-inductance of Cylindrical Coils. R. Rinkel 1489

Interference.

Birefringence, Electrical, of Limonene. R. de Mallemann..... 2073
Brown Corona and Diameters of Particles. L. F. Richardson..... 1341
Colour of the Sea. W. Shoulejkin 816
Diffracting Power in Certain Crystals, Distribution of. R. J. Havighurst.... 2715
Diffraction and Chromatic Aberration in Absence of other Aberrations, Effect of. A. Buxton 822
,, by Black Screens, Theory of. F. Kottler 523
,, Experiments. S. Ray..... 1340
,, Phenomena presented by Set of Alternatively Transparent and Opaque Sectors. A. Boutaric and (Miss) F. Demora 1628
Diffusion of Light and Kerr Constant. R. de Mallemann 2265
Diverging Optical Systems, Interference Method for Measuring Constants of. V. Ronchi 1063
Double Slit Method of Examining Optical Systems. A. Merland..... 336
Grating, Michelson's, Systematic Error in. Rita Brunetti 827
Interference and Dynamics of Light Quanta. L. de Broglie 824
,, Experiments, Optical, and Compton Shift. S. J. Wawilow 2267
,, ,, , ,, , with Multiple Sources. J. J. Dowling and J. A. C. Teegan 2266
,, Fringes, White Light, with Thick Glass Plate. W. N. Birchby.. 823
Iodo-Succinimide, Crystallographic and Optical Properties of. A. E. H. Tutton 2228
Moiré, Application of, to Study of Mica Deformations. M. Mulot..... 2263
Molecular Dispersion of Light in Liquids. R. Gans 825
Multiply-Periodic Systems, Two-coupled Statistics of Quantum Theory and Theory of Dispersion, Remarks on. G. Breit..... 2643
Nephelometry and Suggested Sensitive Test for Stability of Explosives, Some Notes on. A. F. C. Pollard 2069
Opalescence of Binary Liquid Mixtures. J. C. K. Rav 328
Optical Diffraction, Problems in Theory of. E. T. Hanson..... 1064
Organic Vapours, Polarisation of Light Scattered by. A. S. Ganesan..... 1857

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Interference, *continued.*

Radiation from Ultra-Microscopic Particles, Diagrams of. R. Gans 1072
Scattered and Fluorescent Light, Polarisation of. L. Nordheim 2491
,, Light and Molecular Optical Anistropy, Polarisation of. K. R. Ramanathan 1856
Scattering and Dispersion, Quantum Theory of. A. Smekal 1855
,, of Light by Dielectric Spheres. C. V. Raman 2482
,, ,, by Liquid Boundaries and its Relation to Surface-tension. C. V. Raman and L. A. Ramdas 2268, 2677
,, ,, , Wave-length Shifts in. P. D. Foote and A. E. Ruark ... 1631
,, of Radiation by Atoms. H. A. Kramers and W. Heisenberg 1632
Sodium Chloride, Distribution of Diffracting Power in. R. J. Havighurst 2714

Ionisation and Dissociation of Gases.

Actinium Active Deposit Ions, Mobility of. H. A. Erikson 1186
Adsorbed Gas Layers from Glass Surfaces, Removal of. W. Daudt and H. Ewest 2744
Air, Nature of Ions in, and in Carbon Dioxide. H. A. Erikson 642
,, , Total Ionisation produced in, by Electrons of Various Energies. Gladys A. Anslow 1952
Argon, Single and Double Ionisation of, by Electron Impacts. H. A. Barton 1951
Atmosphere, Equilibrium of Ionisation in. J. J. Nolan, R. K. Boylan and G. P. de Sachy 1713
Atomic Nitrogen and its Arc Spectrum, Production of. K. T. Compton 2506
Atoms and Electrically-charged Particles, Shock between. E. Fermi 644
Cæsium Vapour, Photoelectric Ionisation of. P. D. Foote and F. L. Mohler . 2747
Chlorine, Activisation of, by Electric Discharges. K. Schaum and A. Feller.. 403
Dissociation and Ionisation by Collision, Statistical Theory of, with Applications to the Capture and Loss of Electrons by α-Particles. R. H. Fowler 187
Electricity in Gases. K. K. Darrow 1465
Electron Reflection in Gases: Researches on Hydrogen. H. Baerwald 2136
Flames, Ionisation in. E. Marx 2577
Gas-Ion Mobilities. L. B. Loeb 1469
Gaseous Diffusion, Influence of, on Almost Saturated Currents. G. Jaffé 408
,, Reactions, Ionisation produced in. A. K. Brewer 2748
Helium, Mobilities of Positive Ions in. H. B. Wahlin 637
Hydrogen, Ionisation of, by Electron Impact as interpreted by Positive Ray Analysis. T. R. Hogness and E. G. Lunn 2746
,, , Primary and Secondary Products of Ionisation in. H. D. Smyth 1950
Inert Gases, Excitation and Ionisation Potentials of. G. Hertz and R. K. Kloppers 1712
Iodine Vapour, Ionisation of, by Ultra-violet Light. W. West and E. B. Ludlam 1715
Ionisation of Air by X-Rays of Different Wave-lengths, Consumption of Energy on. L. Grebe and L. Kriegesmann 368
,, of Hydrogen. T. R. Hogness and E. G. Lunn 636
,, Potentials, Successive, Calculation of. D. R. Hartree 185
,, Problems, Application of Positive Ray Analysis to. H. D. Smyth . 926
,, , Relative, in Different Gases for Slow-moving Electrons. W. P. Jesse 2576
,, , Simple Kinetic Derivation of, and Vapour-pressure Equation. R. Becker 186
Ionised Gases, Slightly, Characteristic of Currents in. E. Schweidler 1462
,, ,, ,, , Experiments on Characteristic of Currents in. W. Schlenck 1463
Ionising Air by Means of X-Rays of Different Wave-lengths, Experimental Determination of Energy used in. L. Kriegesmann 2103
Ions, Initial Positive, Relative Mobility of, in Gas Mixtures at Low Pressures. H. B. Wahlin 1946
,, , Positive, Liberation-Energy of. A. Güntherschulze 1452
Mercury-vapour, Ionisation of, by Ultra-violet Light. G. F. Rouse and G. W. Giddings 2745
Mobility in Air of Ions produced in Another Gas. G. C. Grindley and A. M. Tyndall 188
Monatomic and Diatomic Gases, Ionisation by α-Particles in. R. W. Gurney 1714
Multiatomic Gases, Ionising Potentials of. C. A. Mackay 407
Negative Ions in Flames, Mobility of, by Hall-Effect Method. J. S. Watt.... 1187

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Ionisation and Dissociation of Gases, *continued.*
Neon, Hydrogen and Nitrogen, Electrical Properties of. S. P. McCallum and C. M. Focken 2137
Positive Ions in Air, Mobility of. H. B. Wahlin 1716
Potassium Vapour, Ionisation of, by Light. R. Samuel 643
,, ,, , ,, , under Action of Visible Light. A. Arnulf.. 1953
Quasi-Neutral Electric Diffusion in Gas, at Rest or Flowing. W. Schottky and J. v. Issendorff 1464
Saha's Ionisation Formula and Theoretical Value of Photoelectric Absorption Coefficient. E. A. Milne 2575
Salt Vapours, Ionisation of. V. Kondratjeff 1954
Statistical Equilibrium between Atoms, Electrons and Radiation, Conditions for. P. A. M. Dirac 411
Thermal Ionisation. M. N. Saha and N. K. Sur 1461

Lenses and Optical Systems.
Aberration of Light. L. Page 1348
Aberrations of Lenses of Short Focal Length. L. Lenouvel 2478
,, of Long Focus Anastigmatic Photographic Objectives. A. H. Bennett 526
,, of Optical Systems, Modification of Method of Zones (Ritchey) for Determination of. J. Cojan 326
,, , Addition of. T. Smith 330
Absorption, Selective, of Coloured Glasses. Marya Kahanowicz and Ada Estrafalaces 323
Achromatic Doublet, Colour Correction of. T. T. Smith 1067
Anastigmat, Taylor-Hobson F/2. H. W. Lee 527
α-Particles, Optical Projection of Tracks of. H. T. Pye 826
Aplanatic Triple Objectives of Equal Interior Curvatures, Calculation of. H. L. Tardy 2254
Back Vertex Power of Combination of Lenses. T. Smith 1065
Binocular Telescopes, Testing of. G. W. Moffitt and P. B. Taylor 2473
Broadening Spectra, Apparatus for. W. J. S. Lockyer 820
Cæsium, Solid, Optical Constants of. J. B. Nathanson 1052
Calcspar Lenses as Polarisers. H. Schulz 2258
,, ,, ,, for Strong Beams of Light, Use of. W. Schütz.. 2067
Chromatic Aberration on the Hilger Lens Testing Interferometer, Measurement of. L. C. Martin and R. Kingslake 333
Cinema Projection from a Continuously Moving Film, Feasibility of. H. D. Taylor 329
Coloured Glass Used in Optical Pyrometry, Effective Wave-Length of. F. Henning 817
Diffraction and Chromatic Aberration in Absence of other Aberrations, Effect of. A. Buxton 822
,, , *see* section Interference.
Dispersion, *see* separate section.
Diverging Optical Systems, Interference Method for Measuring Constants of. V. Ronchi 1063
Double Slit Method of Examining Optical Systems. A. Merland 336
Entzerrung Arrangement, New Semi-automatic, for Topographical Use. C. Aschenbrenner 2261
Etalon, Fabry and Perot. J. K. Robertson 343
First Order Aberrational Equations, General Solution of. T. Smith 546
Foucault Knife-Edge Test when applied to Refracting Systems, Significance of. (Miss) H. G. Conrady 334
Glass for Infra-red, Transparency of. F. Liana 1623
,, Plates or Prisms, Transmission of. J. Barot 325
Grating, Michelson's, Systematic Error in. Rita Brunetti 827
Hyperbolic Relationship in Geometrical Optics. S. Bodócs 87
Illuminator, Monochromatic, for Infra-red and Ultra-violet. G. Athanasiu... 1619
Image Curvature as Function of Diaphragm Position. I. C. Gardner and J. J. Arnaud 1058
Images of Optical Systems, Depth of. H. Krüss 2070
Incandescent Lamp with Quartz Window. D. C. Stockbarger 1618
Interference Experiments, Optical, with Multiple Sources. J. J. Dowling and J. A. C. Teegan 2266

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Lenses and Optical Systems, *continued.*

Interference Fringes, White Light, with Thick Glass Plate. W. N. Birchby.. 823
Interferometer Methods of Measuring Close Double Stars and Fixed Star Diameters. K. F. Bottlinger 1060
,, , Rayleigh. B. W. Clack 1853
Lens-Aberrations, Measurement of. K. Butkow 821
,, Errors, Qualitative Examination and Demonstration of. H. Graf 530
Lenses, Calculations for Correcting. A. Nectoux 2476
Light Filter for Mercury Line 2537. O. Oldenberg 540
Magnifying Power of Microscope, Apparatus for Determining. E. Judin 531
Measurements, *see* separate section.
Meridian Instrument. C. V. Boys 539
Microscopy, All-round Oblique Illumination in. E. Mankenberg 532
Mirrors, Coppered-Glass, Preparation of. E. A. H. French 529
,, , Large Telescopic, New Method of Constructing. G. W. Ritchey 2474
Neutralisation, Theory of. T. Smith 1066
Optical Constants of Crystals in Ultra-violet, Arrangement for Measuring. P. Sève 2256
,, Rotation, Effective Wave-length in Determination of. H. Schulz 2467
,, Systems with reference to Diffraction, Performance of. R. Richter... 1062
Optics, Institute of: Theoretical and Applied. A. de G. de Guiche 1347
Optometer for Visual and Chromatic Acuity. E. Guérin 327
Photo-Elastic Constants of Glass as affected by High Temperatures and by Lapse of Time. F. C. Hanis 755
Photographic Recorder for Temperature and other Physical Quantities. W. H. Stannard and P. E. Klopsteg 340
Photography, *see* separate section.
Polarimeter, Martens, Theory of. J. J. Tichanowsky 541
,, , Universal. C. A. Skinner 1852
Polarisation Prisms, Theory of. VIII. Prisms of Spar and Glass. H. Schulz 538
,, , *see* separate section.
Precision Training, Slow Speed, governed from a Distance. P. P. Schilovsky.. 534
Prism Spectroscope, Curvature of Special Lines in. G. Subrahmaniam and D. Gunnayya..... 81
Prisms, *see also* sections Dispersion, Refraction and Absorption (Light).
Pupillometer. A. Broca 525
Quartz Glass, Transmission of Light through. G. Joos 78
,, , Fused, Blast-Free, Correction of Statement concerning. M. v. Schwarz 77
Radiometer, Nichols. J. D. Tear 2479
Rayleigh Photometer, Modification of. A. Blondel 2480
Reflecting Telescope for Simeis Observatory, Crimea 533
Reflection, *see* separate section.
Refraction, *see* separate section.
Refractometer, Precision, for Liquids. A. Lafay 1346
Screen, in Study of Optical Systems, Use of. V. Ronchi 80
Sky, Whole, Apparatus to Photograph. C. Beck 1059
Spectral Apparatus, New, to Obtain Highest Spectral Purity for Region 200 $\mu\mu$ to Beyond 800 $\mu\mu$. C. Leiss 1851
Spectroscopic Instruments of High Resolving Power, Use of. V. Ronchi.... 1624
Stereoscope, Wide-Angle, and Wide-Angle View-Finder. L. E. W. van Albada 528
Stigmatic and Orthoscopic Corrections. C. W. van der Pijl 2249
Stress Optical Coefficients of Glass for Direct Tension and Pressure. S. R. Savur 2262
Telemeter, Stereoscopic 1343
Telephotographic Lens, Applications of. E. Marriage 2260
,, ,, , Principles and Construction of. H. W. Lee 2259
Telescope especially adapted to Spectrometers, New Type of. C. S. Hastings. 2475
,, Object Glasses, Bench for Testing. L. C. Martin 332
,, , Anallatic Internal Focussing. E. W. Taylor 331
,, , Power of. H. Moeller 2472
Theodolite with Distance-measuring Attachment. E. Hammer 2255
,, , Zeiss, Latest Form of. W. Schermerhorn 1061
Tracing Rays through an Optical System, Rapid Method of. G. Slussareff .. 342
Vibration Camera, Simple Form of. W. H. George 547

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Magnetism.

Anhysteretic Magnetostrictive Effects in Iron, Nickel and Cobalt. P. McCorkle 1745
Annealed Carbon Steels, Magnetism of. S. W. J. Smith, A. A. Dee and W. V. Mayneord 1216
Apparatus and Instruments, *see also* separate section.
Atoms and Molecules, Magnetic Properties of. B. H. Wilsdon 1977
Barkhausen Effect. E. P. T. Tyndall 677
Cupro-Nickel, Reversible Anomaly of, in Domain of Paramagnetic State. P. Chevenard 2365
Cylindrical Magnet through which a Current is Passing, Torque on. J. Zeleny and L. Page 633
Demagnetisation and Hysteresis Loops. L. W. McKeehan and P. P. Cioffi .. 681
Diamagnetism and Size of Ions. G. Joos 2366
Dia-, Para-, and Metamagnetism, Gans' Theory of. G. H. Livens 1212
Direction Quantisation in Magnetic Field. W. Gerlach 1494
Electrolytic Iron and its Alloys melted *in vacuo* and rolled into Sheet, Magnetic and Electric Properties of. M. Fukuda 417
Electromagnet, Centenary of, and William Sturgeon. J. A. Fleming 2156
Electromagnetic Theory, *see* separate section.
,, Waves at Hertzian Lattices, Reflection of. W. Arkadiew .. 197
Ferromagnetism, Contribution to Theory of. E. Ising 1497
,, , ,, ,, . L. W. KcKeehan..... 2764
,, , Remarks on Weiss Theory of. R. H. de Waard 2363
Ferronickels, Magnetic Properties of. M. Peschard 2762
,, , Magnetisation of. M. Peschard..... 2160
,, , Thermomagnetic Properties of. M. Peschard 2159
Flames, Galvanomagnetic Phenomena in. C. W. Heaps 1201
Galvanomagnetic and Thermomagnetic Phenomena, Four Transverse, Connections between. P. W. Bridgman 1200
Gyromagnetic Effect, Some Further Experiments on. J. W. Fisher 2606
,, Ratio for Magnetite and Cobalt. W. Sucksmith 2364
Hall-Effect, *see* section Conductivity (Electric).
Hysteresigraph with Two Mirrors at Right Angles on Synchronous Damped Coils. C. Lapp 2612
Hysteresis Coefficients, Apparatus for Determination of. A. Blondel 2607
Ions, Various Magnetic States of. G. Foëx 1743
Iron Crystals, Magnetic Properties of. W. L. Webster 1744
,, -Nickel Alloy, Magnetic Properties of 50 %. T. D. Yensen 1747
Kelvin's Theorem and its Application to Magnetic Attraction when Permeability is Variable. T. Lehmann 1213
Laminated Iron, Electromagnetic Fields in. O. Betz..... 2605
Magnetic Anisotropy, Artificial, in Nickel Wire. R. Forrer 1978, 2158
,, Bridge for Testing Straight Specimens and Analysis of Hysteresis Loop of Cobalt-Chrome Steel. E. Hughes 2166
,, Constraint in Deformable Bodies having a Non-Rectilinear Characteristic of Magnetisation. T. Lehmann 1496
,, Field on Certain Chemical Reactions, Influence of. M. A. Parker and H. P. Armes 1257
,, ,, surrounding System of Conductors, Graphical Estimation of. W. F. Cooper 507B
,, Fields with Variable Velocity of Movement. N. Japolsky 680
,, ,, , New Apparatus for Measurement of. F. Schröter 671
,, Induction, Contribution to Study of. J. Schwarz 2610
,, Moments of Atoms, Calculation of. N. Semenoff 473
,, Permeability, Apparent, and Hysteresis Loss, Effect of Superposed Alternating Field on. T. Spooner 1746
,, ,, , Reversible. R. Gans 679
,, Rotation, *see* section Polarisation.
,, Spectra, Application of Thomson Ring for Investigation of. N. Nikitin 422
,, Standards and Instruments and Methods of Aerial Magnetic Measurements, Report of Committee on. J. A. Fleming 678
,, State and Variation of Atomic Moment, Equation of. P. Weiss.... 1493
,, Susceptibility of Helium, Neon, Argon and Nitrogen. L. G. Hector. 425
,, Vector Fields, Method for Mapping. P. Kirkpatrick..... 424
Magnetisation of Ferro-magnetic Substances by Rotation and Nature of Elementary Magnet. S. J. and L. J. H. Barnett 2611

For the **Explanation** of this Index see p. 947.

Magnetism, *continued.* Abstract Nos.
Magnetism, Theory of. C. G. Darwin 2157
Magnetite into Hematite, Two-Stage Transformation of. L. A. Welo and O. Baudisch 2393
Magnetochemical Effects. A. Schükarew 731
Magnetometer Deflection Constants, Differential Method for Deriving. H. W. Fisk and C. R. Duvall 1975
,, , Null-reading Astatic. R. M. Bozorth 2165
,, , Sensitive, Insensitive to Extraneous Disturbances. E. P. T. Tyndall 420
Magneton and Rare Earths. B. Cabrera 1555
,, Number, Spectroscopic, Significance of. E. C. Stoner 1979
,, , Theory of, taking into Account Variation of Mass of Electron with Velocity. L. Page 2349
Measurements, *see* separate section.
Nickel Steels, Elastic Tension and Magnetic Behaviour of, near Point of Transformation,. W. del Regno 959
,, , Effect of Transverse Joints on Magnetic Induction in. S. R. Williams 1218
,, , Non-magnetic Sputtered Films of. L. R. Ingersoll and S. S. de Vinney 2609
Oxygen and Molecule O_4, Magnetism of. G. N. Lewis 215
Paramagnetism, Contribution to Quantum Theory of. I. Tamm..... 2161
Permalloy. E. M. Deloraine 1217
,, , Effect of Tension on Magnetic Properties of. O. E. Buckley and L. W. McKeehan 2763
Permanent Magnets. S. Evershed 2164
,, ,, , Evaluation of Degree of Magnetisation of. J. Würschmidt 421
Quantum Magnetic Tubes in Rotation. H. S. Allen 1976
Rare Earths, Susceptibility of. S. Meyer 1220
Schematic Magnets. A. Schmidt 682
Sesqui-oxides of Iron and Chromium, Magnetic Properties of Stable Forms of. L. Blanc and G. Chaudron 1219
Silver Halides, Photomagnetic Properties of. A. Garrison 1748
Space Quantisation of Atoms, Proposed Test of. A. E. Ruark and G. Breit.. 1495
Specific Resistance and Magnetic Properties of Steel. E. D. Campbell and G. W. Whitney 334B
Steel Wire, Effect of Stress on Magnetic Properties of. R. L. Sanford 1215
Susceptibility of Water and Paramagnetic Solutions. B. Cabrera and A. Duperier 2367
Temperature, Methods for Measuring Effect of, on Magnetic Properties. E. M. Terry 2608
Terrestrial Magnetism, *see* separate section.
Thermo-magnetism, *see* section Thermo-electricity.
Thin Films of Ferromagnetic Metals produced by Evaporation Method, Magnetic Properties of. A. J. Sorensen 1214
Undulating Current Magnetisation and its Measurement with Instruments containing Iron. M. Stöckl 675

Measurements and Use of Instruments.

Absorption Phenomena in Photo-electrically-conducting NaCl Crystals. Z. Gyulai 2483
Actinometers with Electrodes coated with Silver Iodide and Copper Oxide, Sensitivity of. G. Athanasiu 2672
,, with Mercury Electrodes, Sensitiveness of. G. Athanasiu 1525
Aerodynamic Force on Aeroplanes, Measurements of. E. Huguenard, A. Magnan and A. Planiol 772
Aluminium Valve, Oscillograph Study of. F. H. Newman 1971
Ampere Meter in High Frequency, Standardisation of. Clayeux 212
Amplification, Measurement of. W. Wolff 1472
Aqueous Vapour-Pressure of Capillary Systems, Indirect Measurement of, by Freezing-Point Depression of Benzene. E. M. Crowther and A. N. Puri 163
Astronomical Objective, Study of. G. Demetrescu 1057
Balance, Eötvös, Use of, for Large Masses which are Near Together. K. Mader 1284
Ballistic Galvanometers, Methods of Varying Sensitiveness of. M Masius.... 1484
,, ,, , Universal Calibration Curve for. D. P. Randall 1203

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Measurements and Use of Instruments, *continued.*

Binocular Telescopes, Testing of. G. W. Moffitt and P. B. Taylor 2473
Brass Tubes, Method for Measuring Internal Stress in. R. J. Anderson and E. G. Fahlman 758
Capacities and High Resistance by Neon Lamp, Comparison of. J. Taylor, W. Clarkson and W. Stephenson 1732
,, , Comparison of, by Means of Triode. K. Gorbatscheff 400
Capillarity and Friction Coefficients of Viscous Fluids, Measurement of. Emma Müller 1294
Celluloid, Use of, in Optical Method for Observing Strains in Structures. M. Wächtler 82
Chromatic Aberration on the Hilger Lens Testing Interferometer, Measurement of. L. C. Martin and R. Kingslake 333
Coaxial Coils, Two Equal, Field of Force near Neutral Circle between. R. M. Wilmotte 1972
Coefficients of Absorption of Light in Fluorescent Substances, Measurement of. S. Pienkowski and A. Jablonski 2662
Corona, Measurement of Intensity of Light of, at Eclipse of Sept. 21, 1922. G. H. Briggs 1040
Cotton Industry, Physical Research in. A. E. Oxley 9
Critical Potentials of Gases, Measurement of. E. G. Dymond 183
Curve Analyser. C. F. Sacia 535
Decomposition Potentials, Measurement of. A. L. Ferguson and G. van Zyl.. 940
Desensitisers, Photographic, and Distortions on Plates due to Local Desensitising, Characteristics of. F. E. Ross 2680
Dielectric Constants of Liquids, Electrometer Method for Measuring. A. P. Carman 418
,, Hysteresis and Allied Phenomena, Studies on. Part 3. H. Saegusa 1204
Double Slit Method of Examining Optical Systems. A. Merland 336
Drop Size in Sprayed Liquids, Measurement of. W. Heubner 1802
Earth's Field, Measurement of Local Variations of, using an Earth Inductor. H. Haalck 2604
Ebullioscopic Measurements in Mixed Solvents. B. H. Carroll, G. K. Rollefson and J. H. Mathews 2315
Electric Potential, Measurement of. A. Wigand and T. Schlomka 180
Electrometer Measurement of Extremely Small Electric Currents. B. Szilard 1487
Electrostatic Voltmeters and Slow Tubes for High-frequency Pressure Measurements. A. Palm 2597
Elementary Charge E from Measurements of Shot-Effect, Determination of. A. W. Hull and N. H. Williams 1458
Emulsions, New Method for Determination of Distribution of Size of Particles in. E. O. Kraemer and A. J. Stamm 1238
Equilibria at High Pressures, Application of Pyrometric Method to Investigation of. N. A. Puschin and J. V. Grebenschtschikow 391
Field Intensity Measurements in Washington on the Radio Corporation Stations at New Brunswick and Tuckerton, New Jersey. L. W. Austin 676
Foucault Knife-edge Test when applied to Refracting Systems, Significance of. (Miss) H. G. Conrady 334
Frequencies by Kathode-Ray Tube, Comparison of. D. W. Dye 1970
Glass Plates or Prisms, Transmission of. J. Barot 325
" Glow " Relay, Technical Application of. H. Geffcken and H. Richter 939
Gravity at Sea, Problem of Measuring. W. G. Duffield 798
Gyro-Magnetic Ratio for Magnetite and Cobalt. W. Sucksmith 2364
Heat Content of Certain Condensed Gases, Determination of. A. Eucken and E. Karwat 609
Humidity, Methods for Measuring S. P. Ferguson 1013
Hydrogen-Ion Concentrations with Glass Electrodes, Measurement of. W. E. L. Brown 725
,, , Diffusion of, into Air, Measured by Interferometer U-Gauge. C. Barus 781
Inductance and Capacity, Method of Comparing. T. B. Vinycomb..... 2596
Induction Coil, Effect of Capacity on. J. A. Crowther and R. J. Stephenson.. 1974
,, ,, , Measurement of Natural Frequency of. H. Nukiyama and K. Kobayashi 673
,, Coils, Experiments on. J. A. Crowther 1973

For the **Explanation** of this Index see p. 947.

Abstract Nos

Measurements and Use of Instruments, *continued.*

Interferometer Methods of Measuring Close Double Stars and Fixed Star Diameters. K. F. Bottlinger 1060
Krarup Conductors, Measurements on. U. Meyer 938
,, Lines, Properties of. U. Meyer 1484B
Lattice Constants of Twelve Common Metals, Precision Measurements of. W. P. Davey 2225
,, Energy of Crystals, Measurement of. W. Wessel 466
Lens Aberrations, Measurement of. K. Butkow 821
,, Errors, Qualitative Examination and Demonstration of. H. Graf 530
Lenses, Calculations for Correcting. A. Nectoux 2476
Linear Elements, Ultra-microscopic Investigation of. A. Szegvari 79
Liquids, Measurements of Velocities in. E. Escande and M. Ricaud 1293
Magnetic Fields, New Apparatus for Measurement of. F. Schröter 671
Magnetometer Deflection-constants, Differential Method for Deriving. H. W. Fisk and C. R. Duvall 1975
Magnifying Power of Microscope, Apparatus for Determining. E. Judin 531
Mercury and Iodine Vapours, Diffusion of, through Nitrogen. J. M. Mullaly and H. Jacques 782
Metals of Great Purity, Electrical Measurements on. W. Geiss and J. A. M. v. Liempt 2179
Microbalance, Ultramicrometer applied to. R. Whiddington and F. A. Long . 1286
Micro-Gas Analysis, New Method of. L. Reeve 395
Microscopy, All-round Oblique Illumination in. E. Mankenberg 532
Microvoltages at Radio Frequencies, Potentiometer Arrangement for Measuring. A. G. Jensen 2759
Millikan Condenser, Measurements in. Y. C. Yang 1446
Modulation, Measurement of. C. B. Jolliffe 1207
" Moiré," Application of, to Study of Mica Deformations. M. Mulot 2263
Mutual Inductance of Circuits with Circular Symmetry about a Common Axis, Tables for Calculation of. F. W. Grover 1738
,, ,, of Two Coaxial Circles, Formulæ, Tables and Curves for Computing. H. L. Curtis and C. Matilda Sparks 942
,, Inductances at Telephonic Frequencies, Comparison of. L. Hartshorn 1737
,, Induction of Two Coaxial Coils, Determination of Coefficient of. J. Hak 1491
Newton's Coefficient of Restitution and Law of Oblique Impact, Method of Measurement of. H. G. Green 2011
Observations, Refined, Elimination of Disturbance in. C. V. Boys 1790
Optical Rotation, Effective Wave-length in Determination of. H. Schulz 2467
Organic Liquids, Compressibilities of. J. Hebeisen 2207
Oscillograph, Increasing Working Range of. C. E. Wynn-Williams 2595
Paint Vehicles and Pigments in Ultra-violet, Observations of Spectro-photometric Measurements of. G. F. A. Stutz 2273
Pendular Oscillations without Material Contact, Electric Maintenance of. J. Villey and P. Vernotte 1791
Pendulum, Herbert: Hardness Tests. R. Mouillac 2001
,, , ,, , Tests with. L. Guillet and J. Galibourg 2002
,, , Influence of the Air on Oscillation Period of. H. Bock 272
Pendulums, Astronomical, Use of Photoelectric Cells in Observation and Maintenance of. G. Ferrié and R. Jouaust 1538
,, , Employment of Photoelectric Cells in Registration of Oscillations of. G. Ferrié 1537
Photographic Blackening, Variability of, and Measurements with Martens Photometer. K. Schaum 553
Physical Measurements, Effects of Atmosphere upon. E. W. Washburn 1279
Pipe-Line Temperature Measurements. E. S. Bristol 1428
Planetary Time and Einstein's Theory. H. Reichenbach 2439
Polarised Electrodes, Commutator Measurements on. M. Knobel 982
Precision Training, Slow-speed, governed from a Distance. P. P. Schilovosky 534
Primary Radio-frequency Standardisation by Use of the Kathode-Ray Oscillograph. Grace Hazen and Frieda Kenyon 668
Recknagel Disc as Indicator of Speed and Direction, Use of. A. Foch 248
Reflecting Power of Metal as Function of Wave-length and Temperature, Method for Determination of. W. J. Beekman and F. W. Oudt 2664
Resistance in Terms of Mutual Inductance, Determination of. A. Campbell .. 1731

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Measurements and Use of Instruments, *continued.*

Screen, in Study of Optical Systems, Use of. V. Ronchi 80
Sediments, Theory of Mechanical Analysis of, by Means of Automatic Balance. R. A. Fisher and S. Odén 987
Self-inductance of Cylindrical Coils. R. Rinkel 1489
Short Time Intervals, Visual Method of Measuring. H. G. Dorsey 13
,, Waves, Absorption of. J. Granier 1189
Spectrograph, Seeman's, and Measurement of Normal X-Rays. A. P. Weber 1904
Spectrophotometry, Photographic, New Method for. L. A. Jones 2075
Spectroscopic Instruments of High Resolving Power, Use of V. Ronchi.... 1624
Speed of Sound in Sea-water, Accurate Determination of. E. A. Eckhardt .. 624
Star Disc, Distribution of Brightness on. M. Maggini 69
Stationary Sound Waves, Relative Temporary Measurements in. J. Friese and E. Waetzmann 174
Stressed Solid Bodies, Slip Bands in. A. Nádai 10
Superheated Steam at High Pressures, Total Heat of. New Method of Measurement, including Latent Heat. H. L. Callendar 2540
Surface-tension, Apparatus for Rapid Measurement of, at Surface of Separation of Two Liquids. P. L. du Noüy 2003
Telescope Object Glasses, Bench for Testing. L. C. Martin 332
Temperature, Methods for Measuring Effect of, on Magnetic Properties. E. M. Terry 2608
Thermal and Electrical Conductivities of some Pure Metals. F. H. Schofield 1425
,, Conductivity in Solids and Liquids, Methods of Measuring L. R. Ingersoll 588
,, ,, , New Methods for Measurement of. T. Barratt and R. M. Winter 1424
Thermojunction Galvanometer System, Calibration of. Abadie 2154
Three- and Four-electrode Valves, some Applications of, to Photoelectric Cells. G. Ferrié 1733
Time Comparisons by Coincidence. J. P. Henderson 1784
,, Intervals from 10^{-7} to $6{\cdot}7 \times 10^{-11}$ Second, Method for Measurement. P. Heymans and N. H. Frank 1999
Triode Valve Resistance Amplifier, Voltage Amplification Ratio of. H. Nukiyama and T. Kuwashima 1208
Tungsten Powder, Determination of Particle Magnitude in. K. Agte, H. Schönborn and K. Schröter 2435
Turbine Blades, Graphical Determination of Meridian Paths of. Eydoux... 2215
Two-layer Coil, Short, Determination of Free Period of. A. Goosmann 1192
Ultra-Centrifuge, New Instrument for Determination of Size and Distribution of Size of Particles in Amicroscopic Colloids. T. Svedberg and H. Rinde 1237
,, -Radio Frequencies, Theory of Determination of, by Standing Waves on Wires. A. Hund 941
,, -violet by Photographic Photometry, Absorption Measurements in. H. Ley and F. Volbert 520
,, ,, , Absorptions in. G. M. Pool 519
Undulating Current Magnetisation and its Measurement with Instruments containing Iron. M. Stöckl 675
Velocity of Light, New Measurement of. A. A. Michelson 524
Vibrations, Lateral, of Rods with or without End Thrusts, Approximate Calculations of Periods of. K. Shôgenji 778
Viscosity, especially of Oils, Measurement of. R. v. Dallwitz-Wegner 2205
Viscous Fluid, Cinematographic Measurements of Downward Motion of Spheres in, and also in Close Proximity to Wall. H. Liebster and L. Schiller.. 1303
Vortex Rings, Certain, Approximate Method of Calculating Motion of. G. Bouligand 2214
X-Ray Spectrograph, Design of Cam for. J. B. Friauf 2675
X-Rays, *see also* separate section.
Young's Modulus for Rods, Optical Interference Method of Measuring. G. F. C. Searle 2

Metallography and Properties of Metals.

Alkali Metals and their Alloys, Normal and Selective Photoelectric Effects in. H. E. Ives and A. L. Johnsrud 660
,, ,, , Photoelectric Properties of Thin Films of. H. E. Ives 661
Alloys, *see also* separate section.

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Metallography and Properties of Metals, *continued.*

Aluminium Crystals, Plastic Extension and Fracture of. G. I. Taylor and C. F. Elam 2415
,, , Electromotive Behaviour of. A. Smits 229
Beryllium, Metallurgy and Alloys of. E. A. Engle and B. S. Hopkins 1276
Bismuth, Metallic, Thermal Expansion of Crystals of. J. K. Roberts 148
,, , Thermal Conductivity of, in Transverse Magnetic Field. F. A. Ward 147
Cast Iron, Distribution of Graphite in, and Influence of Elements on its Strength. M. Hamasumi 1243
Cementation of Copper as Function of Temperature, Speed of. T. Peczalski and A. Launert 440
Copper Bars, Approximate Determination of Depth of Compression in, during Impact. E. W. Tschudi 2420
,, , Effect of Cold-rolling on Hardness of. H. Moore 1249
,, , Effects of Iron on. D. Hanson and (Miss) G. W. Ford 757
Corrosion, Localised, Surface Abrasion as Potential Cause of. U. R. Evans.. 2167
Crystal Recovery. Observations on Softening of Hardened Tungsten Crystals. F. Koref 2223
Elastic After-effect and Plasticity. R. Becker 2211
Electrolytic Iron and its Alloys melted *in vacuo* and rolled into Sheet, Magnetic and Electric Properties of. M. Fukuda 417
Emulsoids, Influence of, upon Rate of Dissolution of Zinc in Solutions of Lead, Nickel and Copper Salts. J. N. Friend and J. S. Tidmus 2377
Fatigue Constancy at High Frequencies. W. Hort 954
,, Limits, Evidence for. H. F. Moore and T. M. Jasper 20B
,, of Steel, Experiments on. A. Ono 441
,, Tests, High-frequency. C. F. Jenkin 2623
Fluxes and Slags in Metal-melting and Working. C. H. Desch 21B
Graphite, Structure of. J. D. Bernal 471
Growth and Wasting of Crystals. G. Friedel 279
,, of Metal Crystals from Gas Phase. H. Fischvoigt and F. Koref..... 2624
Hall and Corbino Effects. C. Bellia 201
Heat Conductivity of the Technically more Important Metals. M. Jakob.... 146
Iron, Action of, on Copper at High Temperatures. P. Siebe 1244
Metal Cleansing with Alkaline Cleaning Solution. E. M. Baker and R. Schneidewind 1252
,, Crystals, Researches on. III. Thermal Expansion of Zinc and Cadmium. E. Grüneisen and E. Goens 784
Metallic Crystals, Flow Resistance of. O. Haase and E. Schmid 2222
,, Lustre. Part II. W. D. Bancroft and R. P. Allen..... 2063
,, Surfaces, Reflection from. I. Ebeling 2064
Metallurgy and Physical Research. J. Czochralski 1247
Metals of Great Purity, Electrical Measurements on. W. Geiss and J. A. M. v. Liempt 2179
,, , Contribution to Theory of. J. Frenkel 472
,, , Deformation- and Recrystallisation-Structure of. R. Glocker 1512
,, , Significance of Gas Contents of, for some Electric Phenomena. A. Janitzky 1482
Natural Isotropic Solid, Equations of State of Plastic Phase of. M. Brillouin 752
,, Light in Metallography, Simulating. H. S. George 819
Nickel and its Alloys 702
,, , Electrolytic, Structure of. G. Wazau 783
Non-ferrous Metallurgy in United States, Recent Developments in, with Special Reference to Nickel and Aluminium Bronze. W. M. Corse 1250
Passive State of Metals. E. Becker and H. Hilberg 1245
Passivity. H. Gerding and A. Karssen 1989
,, of Metals, Electronic Theory of. U. Sborgi 1990, 1991
Physical Metallurgy, Trend in. C. H. Mathewson 1248
Plastic Deformation of Iron and Formation of Neumann Lines. W. Rosenhain and Jean McMinn 2212
,, ,, of Metals, Effect of Free Surfaces on. F. C. Thompson and W. E. W. Millington 753
,, Extension of Metals, Heat developed during. W. S. Farren and G. I. Taylor 1764
Quenching, Effect of, on Mechanical Properties after Annealing. L. Guillet and A. Portevin 1510

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Metallography and Properties of Metals, *continued.*

Red-shortness of Iron ; Influence of S, O, Cu and Mn. J. R. Cain 2783
Repeatedly Reversed Stresses, Materials under. L. Jannin 750
Rolled Cubic Crystallising Metals, Structure of. F. Wever 439
Sesiquoxides of Iron, Aluminium and Chromium, Allotropy of. G. Chaudron and H. Forestier 450
Sodium in Aluminium. D. M. Fairlie and G. B. Brook 1251
Solid Metals, Kinetic Studies of. Decay of Al_2Zn_3. W. Fraenkel and W. Goez 1246
Stainless Steel. W. H. Hatfield 2784
Steel, Hard, Crystal Structure of. K. Heindlhofer 468
,, , X-Ray Studies of Crystal Structure of. A. Westgren and G. Phragmén 469
,, , Zinc-plated, Brittleness of. H. Sutton 2806
Structure, *see also* sections Crystals and X-Rays.
Synthetic Metallic Bodies. IV. Adhesive Forces between Metallic Surfaces. F. Sauerwald and E. Jänichen 1507
Tensile Strength, Temperature and Cold Work in some Pure Metals and Solid Solutions, Relationship between. D. H. Ingall 756
Thermo-electric Condition and Structure of Pure Iron. A. Goetz 1726
Tin Crystals, Alterations on Ductility of. M. Polányi and E. Schmid 2016
X-Ray Spectrography and Metallurgy. H. Weiss 2301
X-Rays in Industrial Control. H. Pilon 2302
Zinc, Tenacity of, by Cold Treatment. G. Masing and M. Polányi 261

Meteorology.

Air and Upper Air Temperature up to Base of Stratosphere, Relation between Source of. C. K. M. Douglas 2445
,, Movements at Earth's Surface, Possible. T. Hesselberg 1021
Aqueous Phenomena over Earth, Distribution of. G. Hellmann 2033
Atmosphere, Breathing of. O. Myrbach 1012
,, , Discontinuities in. A. H. R. Goldie 2029
,, , Dust in. J. J. Nolan 43
,, , Lower, Changes of Temperature in, by Eddy Conduction and Otherwise. S. Chapman 1840
,, , van Bemmelen on Intertropical Part of General Circulation of. B. M. Varney 801
Atmospheric Circulation over North Atlantic Ocean, Oscillations of. A. Defant 488
,, Conditions, Modern, with Special Reference to London. J. S. Owens 1581
,, Electricity and Theory of Cyclones. H. Markgraf 303
,, ,, (*see* Terrestrial Magnetism and Electricity).
,, Pleochroism. J. J. Tichanowsky 300
Aurora, Vegard's Theory of. R. d'E. Atkinson 362
Blue Sky, Shape of. A. Müller 487
British Association for Advancement of Science and International Mathematic Congress, Meteorology at. J. Patterson 1582
Climates, Importance of Field Work in Study of. R. de C. Ward 2444
Climatic Period, Remarkable Sixteen-Yearly, and other Possible Periods. A. Wagner 1841
Clouds and Clear Skies, Photometric Observations on. L. F. Richardson 1580
,, and Forecasting Weather. E. van Everdingen 2644
,, , Groups of Drops in. H. Köhler 1838
Cold and Warm Spells in Atmosphere, Production of. F. M. Exner 1575
Coronas and Iridescent Clouds. C. F. Brooks 1839
Cyclones, Formation of. V. Bjerknes 490
,, , Radio-goniometric Researches on Movement of. E. Gherzi 45
Depressions, Boundary and Drifting. J. Letzmann 2031
Dew and Hoar-frost, Frequency of Occurrence of. G. Hellmann 2237
,, Point, New Method of Determining. M. Holtzmann 301
Dynamical Meteorology, Notion of Interference in. P. Wehrlé and A. Viaut .. 799
Earth, Cooling of. H. Jeffreys 1843
,, , If it went Dry ? N. Shaw 302, 1842
European Upper Air Data, Researches into, with Special reference to the Life History of Cyclones. C. K. M. Douglas 299
Graphical Relations based on Recently Discovered Physical Quantities. E. Kreitmeyer 1017

For the **Explanation** of this Index see p. 947.

Meteorology, *continued.* Abstract Nos.
Humidity, Methods for Measuring. S. P. Ferguson 1013
Hygrometry in Deep Mines. R. S. Jones 805
India, Meteorology of. G. T. Walker 2238
Mean Atmospheric Temperature in Spring in North Iceland, Influence of, on Mean Atmospheric Temperature of following Winter in Europe. W. Wiese 1577
Meteorites, Frequency of. C. Lönnqvist 800
,, , Heliocentric Velocity of. J. Hepperger 491
Meteorological Instruments and Apparatus employed by the United States Weather Bureau. R. N. Covert 1283
Meteors. F. H. Loring 2658
Mountain Observations, Diagnostic and Prognostic Application of. J. Bjerknes 1016
Ozone in Atmosphere, Measurement of Height in Layer of. J. Cabannes and J. Dufay 2449
Palæoclimatology, Mistakes in Methods of. F. v. Kerner 306
Period, Systematically Varying, with Average Length of 28 Months in Weather and Solar Phenomena. H. W. Clough, C. F. Marvin 803
Periodogram, Schuster's, Application of, to Long Rainfall Records, beginning 1748. D. Alter 804
Polar and Equatorial Air over Atlantic Ocean, Registrations of Temperature and Relative Humidity in. K. Knoch 2448
,, Climates, Warm, Problem of. C. E. P. Brooks 1835
,, Front Meteorology. V. Bjerknes 2450
Precipitation, Orographic. S. Ono 1015
Pressure over Large Land Areas, Supposed Periodic Variations of. J. C. K. Rav 44
,, , Monthly, and Temperature Anomalies over Earth. Correlation of Pressure at Iceland with other Places. F. M. Exner 1836
Probability Theory, Schuster's. V. Conrad 297
Radiogoniometric Observations at Shanghai. E. Gherzi 305
Rain Gauge of Standard Commercial Materials and Parts. B. C. Kadel 2236
,, Observed during Anticyclones. E. G. Mariolopoulos 1014
Random Series, Mean Variability in. E. W. Woolard 2030
Saturated Air in Natural Environment, Energy of. N. Shaw and H. Fahmy 2446
Solar Constant, *see also* section Astronomy.
Solar Radiation Intensity, Records of Total, and their Relation to Daylight Intensity. H. H. Kimball 489
Sunspots and Frequency of Tropical Cyclones. S. S. Visher 304
Thermal Equilibrium in Atmosphere. C. G. Rossby 618
Tides in Channel. J. Proudman 1583
Travelling Depressions. J. Letzmann 1578
Turbulence and Vertical Temperature Difference near Trees. L. F. Richardson 1018
Upper Air Circulation of Atlantic Ocean. E. W. Barlow 1579
,, ,, , Correlation between Pressure and Temperature in, with suggested Explanation. W. H. Dines 1576
Waves at Approximately Horizontal Surface of Discontinuity in Atmosphere. A. H. R. Goldie 2447
Wind Observations over the N. and S. Atlantic up to 20 kms. P. Periewitz .. 298
,, Speed with Height for Low Altitudes, Variation of. E. Huguenard, A. Magnan and A. Planiol 802
,, , Change of, with Height for Varying Coefficients of Friction. W. Milch. 2032
,, , Origin of. V. Korotkewitsch 1019
,, , Resistance of Earth Surface to. E. Oddone 1837

Miscellaneous (Chemical Physics and Electro-Chemistry).

Absorption, *see* separate section.
Acids, Undissociated, Nature of. H. v. Halban 830
Active Hydrogen, Properties of. H. Senftleben 2542
,, Sugars in Adsorbed State, Optical Inactivity of. S. S. Bhatnagar and D. L. Shrivastava 344
Activity Constants of Dilute Aqueous Solutions of Hydrogen Chloride, Thallous Chloride and Lead Nitrate. M. Randall and A. P. Vanselow 392
Affinity. T. de Donder 2183
Air and Carbon Dioxide, Preparation and Analysis of Constant Mixtures of. J. Johnston and A. C. Walker 2615

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Miscellaneous (Chemical Physics and Electro-Chemistry), *continued.*

Aliphatic Ketones, Saturated, X-Ray Investigation of. W. B. Saville and G. Shearer 1556
Aluminium Solders. L. Rostosky 228
Ammonia, Explosion of, with Electrolytic Gas ($2H_2 + O_2$) and with Oxygen. J. R. Partington and A. J. Prince 451
,, , Formation of, in Oxy-Hydrogen Flame containing Nitrogen. H. Tominaga 706
Atomic Numbers and Approach of Ions in Crystal Lattice. A. F. Scott..... 1551
,, Vibration Frequency of Elements of Zero Group (Inert Gases), Approximate Calculations of. J. Narbutt 2310
,, Weights, *see* section Molecular Physics.
Barium and Strontium, Very Pure, Preparation of. P. S. Danner 707
Blasting Charges in an Inflammable Atmosphere, Safe Firing of. E. Audibert . 453
Boron, Valency of. R. C. Ray 1314
Briquetting and Fretting of Metallic Oxides and Adhesive Forces between Oxide Surfaces. F. Sauerwald and G. Elsner 1506
Bromine, Redetermination of Atomic Weight of. P. L. Robinson and H. V. A. Briscoe 1316
Brownian Movements, *see* section Molecular Physics.
Bubbles, Small, of Gas in Water, Property of. H. A. McTaggart 972
Calcium Sulphate Solutions, Mechanism of Setting of. C. L. Haddon..... 1258
Carbon and Silver, Atomic Weights of. G. Dean 999
Carbonic Acid in Dilute Solutions of Calcium Hydrogen Carbonate or in Hard Tap-waters. E. M. Crowther and W. S. Martin 455
Catalysis of H_2O_2 by Iron Salts. E. Spitalsky and N. Petin 711
,, , Heterogeneous. W. E. Garner 970
Celtium. J. Bardet and C. Toussaint 2616
Chemical Affinity and Electronic Structure. B. H. Wilsdon 1322, 1824
,, Change, Effect of Diffusion on Time-Rate of. S. Sano 1516
,, Constants, and Frequencies of the Elements, Numerical Values of. A. C. Egerton 1505
Clay, Composition and Properties of. A. F. Joseph and J. S. Hancock 237
Coal-Dust Explosions at the Mines Department Experimental Station at Eskmeals. H. B. Dixon 235
Coke, Reactivity of. J. P. Arend and J. Wagner 443
Colours, Stains and Dyes. J. F. Thorpe 1523
Combustion of Solid Substances, Heat of. W. Jaeger and H. v. Steinwehr... 967
Compounds, Carbon, Electron Displacement in. H. J. Lucas and A. Y. Jameson 290
Conductivity, Electric, *see* section Conductivity and Resistivity.
Constant N of Avogadro. P. L. du Noüy..... 2614
,, ,, ,, , New Determination of. L. M. Alexander 1752
,, ,, ,, ,, ,, ,, , based on its definition. P. L. de Noüy 431
Contraction Constants and Affinity of Solid Compounds. A. Balandin 2184
Corrosion, *see* section Solution.
Crystals and Chemical Constitution, Thermal Expansion in. F. A. Henglein . 2536
Cupferron, Salts of. (Miss) V. Auger, L. Lafontaine and C. Caspar..... 1521
Diamond, Transformation of, in Vacuo at High Temperatures. P. Lebeau and M. Picon 893
Dibasic Acids, Photolysis of. Volmar 1859
Diffusion, *see* separate section.
Dipole Molecules and Chemical Meaning of Orientation Polarisation, Magnitude of Electrical Moments of. L. Ebert 1001
Dissociation and Ionisation, *see* separate section.
Dyes, Relation of Thickness of Layer to Photoelectric Effect in. A. Predwoditelew and N. Netchaewa 663
Electric Furnace Processes, *see* separate section.
Electro-Chemical Deposits, Structure of. R. Audubert 726
Electrodes, Normal, *see* section Batteries, Primary.
Electrolysis, *see* separate section.
Electrolytic Analysis, *see* separate section.
Electrophoresis, Supposed Influence of Light on. K. Schaum and P. Friederich 727
Elements in Earth, Radial Distribution of. H. S. Washington 808

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Miscellaneous (Chemical Physics and Electro-Chemistry), *continued.*

Elements, Physical System of. C. G. Bedreag 1548
Emulsions, Modern Views on Sensitivity of. T. S. Price 1864
Equation of State, *see* section Thermodynamics.
Equilibrium, Chemical, *see* section Chemical Equilibrium.
Explosives, Development and Application of Initiating. B. Grotta 1520
,, , Twenty-five Years' Progress in. C. L. Reese 965
Fatigue of Steel, Experiments on. A. Ono 441
Fatty Acids and Di-Acids, Study of, by Means of X-Rays. J. J. Trillat 1818
,, ,, , Molecular Orientation of. J. J. Trillat 1006
,, ,, , Structure of. X-Ray Analysis. G. Friedel 1317
Gas Films, Removal of. W. D. Bancroft 1230
,, Ignition by Electric Sparks, Thermal Theory of. J. D. Morgan..... 1468
Gaseous Mixtures, Thermal Separation in. G. A. Elliott and I. Masson..... 2322
,, Reactions, Ionisation produced in. A. K. Brewer 2748
Gases for Gaseous Laws, *see* section Gases.
Gelatine, Amphoteric Character of. P. K. Frölich 2802
,, , Physico-Chemical Properties of. Rotary Power. F. Vlès and E. Vellinger 1629
Glass, Annealing and Re-annealing. W. M. Hampton 1135
,, , Optical, *see* section Lenses.
Gold in Mercury, Estimation of. H. Stammreich 1508
,, , Production of, from Mercury under Action of Electric Discharge. A. Miethe 1509
Grignard Compounds, Chemi-Luminescent Spectra of. R. T. Dufford, Dorothy Nightingale and S. Calvert 845
Haber Equilibrium Data, Representation of, by an Equation. L. J. Gillespie 1693
Halogen Hydracids in Methyl and Ethyl Alcohol, Conductivity and Catalytic Action of. H. Goldschmidt and P. Dahll 931
Helium and Neon in Vacuum Tubes, Occurrence of. R. W. Riding and E. C. C. Baly 2749
Hydrogen and Palladium, Relationships existing between. B. Lambert and S. F. Gates 2373
,, Bromide, Photochemical Formation of, and Velocity of Formation of Bromine Molecule from Atoms. M. Bodenstein and H. Lütkemeyer 831
Ignition of Gases. III. Ignition by the Impulsive Electric Discharge. Mixtures of Paraffins with Air. R. V. Wheeler and S. C. Lind..... 233
,, ,, . IV. Ignition by a Heated Surface. Paraffin-Air Mixtures. W. Mason and R. V. Wheeler 234
,, ,, . V. Ignition by Inductance Sparks of Paraffin-Air Mixtures. R. V. Wheeler..... 1145
Indices of Refraction of Elements and Compounds, and Relation between Critical Potentials. B. Davis 2667
Interfaces, Chemistry at. W. Hardy 2193
Ionisation, *see* section Dissociation.
Ions and Molecules, Refraction and Electron Constraint in. C. P. Smyth.... 2429
,, , Hydration of. A. Gyemant 977
Isoelectrical Points. R. Kuhn 984
Isotopes of Lead. H. Brennen 1005
,, , *see also* section Molecular Physics.
$K_{\alpha 1, 2}$ Doublet of Light Elements and Dependence of X-Ray Spectrum upon Chemical Combination. E. Bäcklin 2520
Lithium, Chemistry of. Relation between Contraction, Refraction and Absorption of Light in Aqueous Salt Solutions. G. F. Hüttig and M. Keller.. 2464
Long-Chain Compounds (11 Hydrocarbons), Further X-Ray Measurements on. A. Müller and W. B. Saville 1557
Lubrication, Chemistry of. W. F. Seyer and S. R. McDougall..... 743
Magnetochemical Effects. A. Schükarew 731
Magneton and Rare Earths. B. Cabrera 1555
Methyl Chloride, Compressibility and Molecular Weight of. T. Batuecas.... 2208
Mining Explosives in an Inflammable Atmosphere, Condition for Ensuring Safety with. E. Audibert 452
Mixtures and Compounds, Determination by X-Ray Spectroscopy of Percentages by Weight of Various Elements in. R. Glocker and W. Frohnmayer 1418
Mobility of Ions in Solid Cuprous Sulphide. H. Braune and O. Kahn..... 966

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Miscellaneous (Chemical Physics and Electro-Chemistry), *continued.*

Molecular Attraction, *see also* section Molecular Physics.
Mutarotation. R. Kuhn and P. Jacob 339
Nephelometer, New Type of. R. Kingslake 2068
Nephelometry and Suggested Sensitive Test for Stability of Explosives, Some Notes on. A. F. C. Pollard 2069
Number N and Certain Molecular Dimensions, New Method of Determining, based on Study of Surface Equilibrium of Colloidal Solutions. P. L. du Noüy 2769
Optical Activity and Rotation, *see* section Polarisation.
Optically-Active Compounds, Compounds of Malic Acid, Copper and Bases, Study of. E. Darmois 828
Organic Compounds, Liquid, Theoretical Stoichiometry of Space occupied, and Intermolecular Forces in. I and II. E. Wöhlisch 1553
Osmosis, *see* separate section.
Oxidation and Combination of Gases by Electric Discharge, *see also* section Discharge.
,, , Heats of. J. E. Moose and S. W. Parr 963
Periodic System and Elements which are Electronic Isomers. R. Swinne ... 2426
,, ,, , *see also* section Molecular Physics.
*p*H, Spectro-Photometric Measurement of. F. Vlès 1513
Phase Rule, *see* sections Chemical Equilibrium and Thermodynamics.
Phosphorus, Glow of. (Lord) Rayleigh 704
Photochemical Potential Changes. K. Schaum and W. Schleussner 2484
,, Processes in Dyes, Kinetics of. A. Predwoditeleff and N. Netschajewa 1860
Photometry, Heterochromatic, Test Solutions for. K. S. Gibson 1633
Photosynthesis in Tropical Sunlight. N. R. Dhar and R. P. Sanyal 2685
Piezo-Chemical Studies. Influence of Pressure on Solubility. E. Cohen, W. A. T. de Meester and A. L. T. Moesveld 949
Polarisation, Dielectric. L. Ebert 730
Polyatomic Polar Molecules, Shape of. I and II. F. Hund 1558
Potash from Cement Dust. Concentration by Elutriation. E. J. Fox and C. W. Whittaker 705
Quantitative Analysis by X-Rays, New Method of. E. Delauney 2171
Quinhydrone Electrode, Thermodynamics of, and Chemical Constant of Hydrogen. E. Schreiner 2794
Radical Theory in Modern Chemistry. C. A. Kraus 292
Raoult's Law and Partial Heats of Solution, Relation between Deviations from. J. A. V. Butler 1235
Sediments and Solutions of Electrolytes in Contact with them, Electrokinetic Relations between. R. Labes 2194
Sesquioxides of Iron, Aluminium and Chromium, Allotropy of. G. Chaudron and H. Forestier 450
Silver Compounds, Photo-Chemistry of. J. Eggert and W. Noddack 1635
,, Halide Emulsions, Proof of Quantum-Equivalent Law in. J. Eggert and W. Noddack 1636
Simple Compounds and Different Varieties of Solid State, New Properties of. E. Friederich 1811
Smectic Substances and X-Rays. E. Friedel 1117
Solid Phases, Reactivity of. J. A. Hedvall 710
Solution and Solubility, *see* separate section.
Specific Heat of Bromine at Low Temperatures and its Chemical Constant. R. Suhrmann and K. v. Lüde 382
Sulphur, Chemical Constitution and X-Ray Spectrum of. B. Ray 2716
Surface Films on Water, Structure of. N. K. Adam 1236
Synthetic Metallic Bodies. Adhesive Forces between Metallic Surfaces. F. Sauerwald and E. Jänichen 1507
Tartaric Acid as Function of *p*H, Variation of Rotary Power of. F. Vlès and E. Vellinger 1630
Thermo-Chemistry, *see also* section Miscellaneous (Heat).
Thermodynamic Investigations, *see* section Thermodynamics.
Thermo-Elements in Measurement Technique of Heavy Chemical Industry, Applications of P. Gmelin 1138
Transference Numbers of Sodium and Potassium Chlorides and of their Mixtures. Jane Dewey 2628

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Miscellaneous (Chemical Physics and Electro-Chemistry). *continued.*

Transference Numbers of Solutions of Mixed Chlorides. D. A. MacInnes..... 2627
,, ,, , Moving-Boundary Method for Determining. Part III. Novel Form of Apparatus. D. A. McInnes and T. B. Brighton 1773
,, ,, , Moving Boundary Method for Determining. Part IV. Transference Numbers of some Chloride Solutions. E. R. Smith and D. A. McInnes 1774
Valence of the Rare Earths on Bohr's Theory. F. Zambonini 294
Valency, Suggestions for Magnetic Theory of. A. P. Laurie 293
Vanadium Pentoxide Sol, Quantitative Investigations on Flow Anisotropy. II. The Eddy Cross. H. Freundlich, F. Stapelfeldt and H. Zocher... 813
Vaporisation and Chemical Changes on the Surface of Contact of Two Fluids, Time-Rates of. S. Sano 1515
Vapours for Gaseous Laws, *see* section Gases.
Viscosity, *see* separate section, *also* section Solution.
Walden Inversion. B. K. Singh 40
Wood's Active Hydrogen. K. F. Bonhoeffer 709
X-Rays, Action of, on Certain Organic Ferments and Cells. Guilbert, R. Petit and M. Lemay 371

Miscellaneous (Electricity and Magnetism).

Alternate-Current Research, *see* separate section.
Ampère Trough Experiment. F. W. Grover, J. P. Das and J. H. Turnbull .. 1701
Aperiodic Processes, Quantum Theory of. M. Born and P. Jordan..... 2492
Arc, Electric, *see* section Discharge.
Atmospheric Electricity, *see* section Static Electricity.
Barlow's Wheel. A. Carrelli 913
Capacity (Electrostatic), *see* separate section.
Cells, Voltaic, *see* section Batteries, Primary.
Condensers, *see also* Capacity, Dielectrics and Discharge.
Conductivity (Electric) and Resistivity, *see* separate section.
Contact Electricity, *see* sections Batteries (Primary) and Static Electricity.
Crystal Rectification of Alternating Currents. A. C. James 1962
Current Distribution in a Wheel. J. Würschmidt and F. Stäblein 344B
Cylindrical Magnet through which a Current is passing, Torque on. J. Zeleny and L. Page 633
Dielectrics, *see* separate section.
Discharge (Electric), *see* separate section.
Double Layer and Vortex Line, Theorem of Equivalence of. C. de Jans 914
Earth Currents, *see* section Terrestrial Magnetism and Electricity.
Electrical Charge on Earth's Surface. C. Ramsauer 635
Electrification, *see* section Static Electricity.
Electrodynamics, Stationary Motions in. U. Crudeli 791
Electrolytic Trough to imitate Electrical Field of Conductors, Use of. W. Zschaage 1553B
Electromagnetic Theory, *see* separate section.
Electrostatics, *see* section Static Electricity.
Electrostriction in Liquids which are only Slightly Birefracting. M. Pauthenier 920
Field, Magnetic, *see* section Magnetism or Electromagnetic Theory.
Filtration, Electromotive Force of. L. Riéty 2632
Flames, Galvanomagnetic Phenomena in. C. W. Heaps 1201
Galvanomagnetic and Thermomagnetic Phenomena, Four Transverse, Connections between. P. W. Bridgman 1200
Galvanometers, *see* sections Apparatus and Measurements.
Gas Ignition by Electric Sparks, Thermal Theory of. J. D. Morgan 1468
Gases, Ignition of. Part V. Ignition by Inductance Sparks of Paraffin-Air Mixtures. R. V. Wheeler..... 1145
Hall Effect, *see* section Conductivity (Electric).
Hysteresis, *see* section Magnetism.
Induction, Magnetic, *see* section Conductivity (Electric).
,, , (Self and Mutual), *see* separate section.
Interrupters, *see also* section Apparatus (Electrical)
Iron, Galvano-Magnetic Experiment upon. G. Polvani 912
Kathode Rays, *see* sections Discharge and Rays.
Lightning, *see* section Static and Atmospheric Electricity.
Magnetism, *see* separate section.

For the **Explanation** of this Index see p. 947.

Abstract Nos

Miscellaneous (Electricity and Magnetism), *continued.*
Measurements, *see* separate section.
Metals, Significance of Gas Contents of, for some Electric Phenomena. A. Janitzky 1482
Network, Electric Currents in. P. Franklin 1940
Permeability, *see* section Magnetism.
Photoelectric Cells, *see* sections Batteries (Primary) and Discharge.
Polarisation (Electrolytic), *see* separate section.
Piezoelectric Crystal Rods, Optical Methods of Demonstrating High-frequency Longitudinal Oscillations of. E. Giebe and A. Scheibe 2593
,, Properties of Crystals, Qualitative Examination of. E. Giebe and A. Scheibe 2594
,, Standards of High Frequency. W. G. Cady 1734
Piezoelectricity, Lattice Theory of. G. Heckmann 2592
Rectified Current, High-Power, at 500,000 Volts. J. Saget. 1417
Reluctivity, *see* section Magnetism.
Rochelle Salt Crystal, Relation between Mechanical and Piezoelectrical Properties of. F. C. Isely 665
Röntgen Rays, *see* section X-Rays.
Specific Inductive Capacity, *see* section Dielectrics.
Static Electricity, *see* separate section.
Sub-Electron Question, Mathematical Statistical Investigation of. H. Daecke 788
Telegraphy, *see* section B.
Telephony, *see* section B.
Terrestrial Magnetism and Electricity, *see* separate section.
Thermoelectricity and Thermomagnetism, *see* separate section.
Tubes, Vacuum, *see* sections Discharge and Apparatus.
Voltaic Action, *see* section Batteries, Primary.
Voltameters, *see* section Electrolysis
Waves, *see* section Oscillations and Waves.
Wireless Telegraphy, *see* section B, *also* section Oscillations
X-Rays, *see* section X-Rays.

Miscellaneous (General Physics).
Adhesives and Adhesive Action. J. W. McBain and D. G. Hopkins 1297
Aerodynamics, *see* section Dynamics.
Alloys, *see* separate section.
Anisotropic Liquids, Contributions to Theory of. C. W. Oseen 2005
,, ,, , Further Contribution to Theory of. C. W. Oseen 765
Aperiodic Processes, Quantum Theory of. M. Born and P. Jordan..... 2492
Astronomy, *see* separate section.
Atomic Weights, *see* section Molecular Physics, Matter and Ether.
Boundary Lubrication. W. Hardy and I. Bircumshaw 2414
Brownian Motions, *see* section Molecular Physics.
Bubbles, Small, of Gas in Water, Property of. H. A. McTaggart 972
Capillarity, *see* section Surface Tension.
Chronometer Spirals with Pinching Pieces (Vetterlein System). H. Bock.... 254
Circular Cylinders in Viscous Fluid, Motion of. R. A. Frazer 2008
Cotton Industry, Physical Research in. A. E. Oxley 9
Critical Constants, *see* section Critical Points.
Curvature Gauge. C. K. Wentworth 247
Deep Water, Irrotational Waves in. T. Levi-Civita 770
Deformation, *see* section Elasticity.
Density, *see* separate section.
Detachment Method, Theory of. J. J. Tichanowsky 2418
Diffusion, *see* separate section.
Dissipation Function of Lord Rayleigh. B. Finzi 1806
Distributions, Globular, Study of Properties of. S. D. Wicksell 777
Drift Indicator. J. N. Carruthers 253
Drop Size in Sprayed Liquids, Measurement of. W. Heubner 1802
Dynamics, *see* separate section.
Eddington's Natural Unit of Field and Possible Relations between it and Universal Constants of Physics. J. Rice 1569
Elasticity, *see* separate section.
Electrostriction in Liquids which are only Slightly Birefracting. M. Pauthenier 920
Elements, Physical System of. C. G. Bedreag..... 1548

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Miscellaneous (General Physics), *continued.*
Equations of Motion of a System of Particles of Variable Mass. R. Dugas... 16
Equilibria in Systems in which Phases are separated by a Semipermeable Membrane. I and II. F. A. H. Schreinimakers 1539
Ether, *see* section Molecular Physics, Matter and Ether.
Expansion, *see* section Dilatation.
Fatigue Constancy at High Frequencies. W. Hort..... 954
Flotation, Surface Reactions in. A. W. Fahrenwald 744
Fractionnating Column with Moving Parts. J. E. Myers and W. J. Jones ... 991
Graphical Relations based on recently discovered Physical Quantities. E. Kreitmeyer 1017
Gravity, *see* separate section.
Incompressible Liquid of Velocity Potential due to Vortex Tube, Determination in. B. Stetchkine 2007
Instable Equilibrium by Means of Gyroscopic Forces, Stabilisation of. H. J. E. Beth 1807
Interior Ballistics. Gossot and Liouville 1685
Liquid Columns, Round, Influence of Degree of Instability on Phenomena of. R. A. Castleman, Jr. 768
,, Jets, Characteristic Curves of. E. Tyler and E. G. Richardson 2421
Lubricating Oils, Measurement of Effectiveness of. R. v. Dallwitz-Wegner.. 257
Lubrication, Boundary: Influence of Composition of the Solid Face. I. Doubleday 256
,, , Chemistry of. W. F. Seyer and S. R. McDougall..... 743
,, , *see* sections Surface Tension and Viscosity.
Measurements, *see* separate section.
Mechanical Problems, *see* section Dynamics.
,, Systems, Quantum Theory and Periodicity Characteristics of. G. Wataghin 1008
,, Transformability (Adiabatic Hypothesis), Principle of. M. v. Laue 2128
Metallography, *see* separate section.
Meteorology, etc., *see* separate section.
Natural Isotropic Solid, Equations of State of Plastic Phase of. M. Brillouin.. 752
Non-ergodic Systems, Statistical Mechanics of. G. Jaffé 1808
,, -Holonomous System, Order of. P. Appell 18
Photography, Single-Spark, and its Application to Problems in Ballistics. P. P. Quayle 1866
Physical Optics 2061
Physics, Trend of Thought in. W. F. G. Swann 2018
Planetary Time and Einstein's Theory. H. Reichenbach 2439
Plastic Deformations, Application of Theory of Elasticity to. E. Hungerer and J. Koenigsberger 1543
Pressures (High and Low), *see* separate section.
Quantum Integrals, Adiabatic Invariance of. P. A. Dirac 1809
Resistance Law for Very Small Spheres in Gases, Simple Deviation of. T. Sexl..... 1810
,, , Law of, to Spherical Particles in a Gas. J. Mattauch 775
Rigidity, *see* section Elasticity.
Screw Thread Commission, National, Report of 1786
Sediments by Means of Automatic Balance, Theory of Mechanical Analysis of. R. A. Fisher and S. Odén 987
Short Time Intervals, Visual Method of Measuring. H. G. Dorsey 13
Specific Gravity, *see* section Density.
Steam, Efflux, Velocity and Specific Heat of, *see* sections Gases and Specific Heat, *also* section B.
Stress, *see* sections Elasticity and Metallography.
Surface Tension, *see* separate section.
Synchronisation, General Mechanism of. J. Andrade 1544
Time and its Measurement. K. Vogtherr 794
,, Comparisons by Coincidence. J. P. Henderson 1784
,, Intervals from 10^{-7} to $6{\cdot}7 \times 10^{-11}$ Second, Method for Measurement of. P. Heymans and N. H. Frank 1999
,, Service of the Paris Observatory. G. Bigourdan 243
,, Signals, Accurate. F. Marre 2452
Torsion, *see* section Elasticity.

For the **Explanation** of this Index see p. 947.

A stract Nos.

Miscellaneous (General Physics), *continued.*

Transition-Points, Apparatus for Viscosimetric Determination of. N. H. Hartshorne 245
Tungsten Powder, Determination of Particle Magnitude in. K. Agte, H. Schönborn and K. Schröter 2435
Turbulence Problem and Allied Questions. I. Experimental Basis. L. Schiller 2423
,, ,, for Straight Circular Pipe. H. Lorenz 2422
Units, Ultimate Rational, and Dimensional Theory. G. N. Lewis 1546
Vibration of Pump Valves. W. Hort 17
Vibrations of Bars. E. F. Relf and W. L. Cowley 15
,, , Lateral, of Rods with or without End Thrusts, Approximate Calculation of Periods of. K. Shôgenji 778
Viscosity, *see* separate section.
van der Waals Equation of State and Liquid State of Aggregation. I. and II. J. Berger 167, 2127
Walden Inversion. B. K. Singh 40

Miscellaneous (Heat).

Activated Hydrogen, Condensation and Re-evaporation of. F. Paneth 615
Activity Constants of Dilute Aqueous Solutions of Hydrogen Chloride, Thallous Chloride and Lead Nitrate. M. Randall and A. P. Vanselow 392
Affinity. T. de Donder 2183
Atomic Vibration Frequency of Elements of Zero Group (Inert Gases), Approximate Calculation of. J. Narbutt 2310
Blankets, Measurement of Heat Insulation and Related Properties of. P. D. Sale and A. F. Hedrick 896
Boiling-points, *see* section Freezing-points.
Boyle's Law, New Design for Apparatus to Measure Coefficient of Deviation from, and Determination of this Coefficient for Acetylene. J. T. Howarth and F. P. Burt 2123
Combustion Bomb, Small, and Micro-Calorimeter. W. A. Roth, H. Ginsberg and R. Lassé 153
,, , Inflammation and Flame Propagation, *see* section Gases.
Condensation Nuclei produced by Illumination of Air-Halogen Mixtures. I. C. Jones 2541
Contraction Constants and Affinity of Solid Compounds. A. Balandin 2184
Convection, *see* section Radiation (Heat).
Cooling of Hot Bodies in Gases and Liquids. R. Seeliger 1692
Deposits from Molecular Rays, Formation of, Influence of Ray Density and Geometrical Dimensions upon. J. Estermann 2317
Diamond, Transformation of, *in vacuo* at High Temperatures. P. Lebeau and M. Picon 893
Diffusion of Certain Alkali Salt Vapours in Bunsen Flame, Coefficients of. G. E. Davis 601
Emissivity, *see* section Radiation (Heat).
Equilibria at High Pressures, Application of Pyrometric Method to Investigation of. N. A. Puschin and J. V. Grebenschtschikow 391
Evaporation of Water, Influence of Thin Surface Films on. G. Hedestrand .. 614
Evaporators, Vacuum, Cause of Splitting of Tubes in. B. Neumann and E. Zöllner 1134
Expansion, *see* section Dilatation.
Explosions; Observations on Communication of E. Burlot. H. le Chatelier .. 889
Explosions, *see also* section Gases.
Explosive Wave, Propagation of. P. Laffitte 890
Explosives, Determination of Theoretical Force and Co-Volume of. E. Burlot 888
Flame in Inflammable Gas-Air Mixtures, Limits for Propagation of. A. G. White 600, 1689
Freezing-, Melting-, and Boiling-points, *see* separate section.
Gaseous Combustion at High Pressures. Part V. The Explosion of Hydrogen-Air and Carbon Monoxide-Air Mixtures at Initial Pressures up to 175 Atmospheres. W. A. Bone, D. M. Newitt and D. T. A. Townend . 2403
Gases and Vapours, *see* separate section.
,, , Ignition of. Part V. Ignition by Inductance Sparks of Paraffin-Air Mixtures. R. V. Wheeler 1145
Glass, Annealing and Re-Annealing. W. M. Hampton 1135

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Miscellaneous (Heat), *continued.*
Graphical Relations based on Recently Discovered Physical Quantities. E. Kreitmeyer 1017
Haber Equilibrium Data, Representation of, by an Equation. L. J. Gillespie 1693
Heating and Cooling of Bodies of Simple Geometrical Form. H. Gröber 1922
Helium, Joule-Thomson Effect for. J. H. Perry 901
Hydrogen Liquefying Cycle and Cryostat for the Maintenance of Low Temperatures. W. M. Latimer, R. M. Buffington and H. D. Hoenshel..... 2117
Ice Crystallisation, Velocity of, through Supercooled Gelatine Gels. E. H. Callow 2382
Incubation, Artificial, Scientific Principles of. L. B. Atkinson..... 621
Interior Ballistics. Gossot and Liouville 1685
Isotherms of Helium, Nitrogen and Argon below 0°. L. Holborn and J. Otto 1146
Joule's First Measurements of " J." W. W. H. Gee 1924
Koehler Safety Lamp, Use of, in Testing Tanks for Combustible Gases or Vapours. R. E. Wilson and R. E. Wilkin 602
Latent Heat, *see* section Specific Heat.
Liquids, Property-Composition Curves of Binary Mixtures of. L. Frank 903
Measurements, *see* separate section.
Melting-points, *see* section Freezing-points.
Partial Pressures of Liquid Mixtures at Boiling-point, Effect of Non-volatile Solute on. B. H. Carroll, G. K. Rollefson and J. H. Mathews 2314
Pyrometry, *see* section Thermometry.
Radiometer Action, *see* section Radiation (Heat).
Refrigerating Machines employing Throttle Expansion, Coefficient of Performance of. A. W. Porter 590
Specific Affinity, Calculation of. T. de Donder 2391
,, Heat, *see* separate section.
Superheating of Liquids. F. B. Kenrick, C. S. Gilbert and K. L. Wismer ... 594
Temperature, *see* separate section.
Temperatures (High and Low), *see* separate section.
Thermal Diffusion Measurements. T. L. Ibbs 1690
Thermodynamics, *see* separate section.
Thermo-Elements in Measurement Technique of Heavy Chemical Industry, Applications of. P. Gmelin 1138
Vacuum Vessels, Metal, containing Liquid Oxygen, Conduction of Heat down Necks of. G. R. D. Hogg 1133
Vapour-pressure, *see* separate section.

Miscellaneous (Light).
Aberration and Moving Media, *see* section Rays.
,, of Light. L. Page 1348
Aberrations of Long Focus Anastigmatic Photographic Objectives. A. H. Bennett 526
,, of Optical Systems, Modification of Method of Zones (Ritchey) for Determination of. J. Cojan 326
,, , Addition of. T. Smith 330
Absorption, *see* separate section.
Active Sugars in Adsorbed State, Optical Inactivity of. S. S. Bhatnagar and D. L. Shrivastava 344
After-Images, Recurrence and Decay of. Winifred J. Smith 1617
Anisotropic Liquids, Contributions to Theory of. C. W. Oseen 2005
,, ,, , Further Contribution to Theory of. C. W. Oseen 765
Aperiodic Processes, Quantum Theory of. M. Born and P. Jordan..... 2492
Axial Point Objects, Caustics of. W. Merté..... 2477
Cæsium, Solid, Optical Constants of. J. B. Nathanson 1052
Canal Rays, *see* section Rays.
Chemiluminescence and Heteropolar Combination. A. Petrikaln 2076
Chlorine, Photo-activation of. W. Taylor 2182
Chromatic Visibility Coefficients by Method of Least Squares. D. B. Judd .. 2065
Cinema Projection from Continuously Moving Film, Feasibility of. H. D. Taylor 329
Cinematography, Colour, Friese-Greene Process of. C. H. Friese-Greene.... 2074
Colour and Colorimetry, *see* section Absorption (Light).
Corona, Measurement of Intensity of Light of, at Eclipse of September 21, 1922. G. H. Briggs 1040
Crookes Tube, *see* Tubes (section Discharge).

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Miscellaneous (Light), *continued.*
Crystals, Mixed, Optical Properties of. Mary W. Porter 2466
,, , Optical Properties of, *see* section Molecular Physics.
Depolarisation of Light by Diffuse Reflection. G. P. Woronkoff and G. I. Pokrowski 2679
Deviation of Light, *see* section Rays and Radiation.
Dibasic Acids, Photolysis of. Volmar 1859
Diffraction and Chromatic Aberration in the Absence of other Aberrations, Effect of. A. Buxton 822
,, , *see* section Interference.
Diffusion of Light and Kerr Constant. R. de Mallemann 2265
,, ,, and Ratio of Absolute Delay in Phenomenon of Kerr. Y. Rocard 2469
,, ,, by Methane and its Homologues. J. Cabannes and J. Gauzit 2678
,, ,, in Fluids. Y. Rocard 2468
,, ,, ,, , Theory of. Y. Rocard 543
Dispersion, *see* separate section.
Electromagnetic Waves, *see* section Oscillations and Waves.
Emulsions, Modern Views on Sensitivity of. T. S. Price 1864
Ether, Relative Motion of, *see also* sections Molecular Physics, Dynamics and Interference.
First Order Aberrational Equations, General Solution of. T. Smith 546
Fluorescence, *see* section Phosphorescence.
Fluorite, Effect of Heat Treatment upon Kathodo-Phosphorescence of. F. G. Wick and J. M. Gleason 837
Gelatine, Physico-Chemical Properties of. Rotary Power. F. Vlès and E. Vellinger 1629
Huyghens' Optics and Theory of Relativity. W. Rivier 797
,, Principle. W. Anderson 1349
Index of Reflection, *see* section Reflection.
,, of Refraction, *see* section Refraction.
Interference, *see* separate section.
Interior Diffusion and True Absorption of Light. T. Bialobjeski 542
K_α Doublet, Dependence of, on Chemical Constitution. B. B. Ray 1101
Kathode Rays, *see* sections Discharge and Rays.
Kinematics. C. L. R. E. Menges 1614
Laue, Diagrams of, obtained by Means of Monochromatic X-Rays and Structure of Mother-of-Pearl. J. H. Shaxby 1118
Lenses and Optical Systems, *see* separate section.
Light and Photophoresis, Calorimetric Measurements relating to Pressure of. J. Ramler 1641
,, Quanta, Impact of. K. Schaposchnikow 2493
,, -Velocity, Ballistic Principle of. M. la Rosa 2460
,, , Biological Action of. L. Hill 1849
,, , Effect of Earth's Rotation on Velocity of. A. A. Michelson, H. G. Gale and F. Pearson 2025
,, , Structure of. J. J. Thomson 1938
Luminescence. W. S. Andrews 1022B
Lustre, Origin of Impression of. H. Zocher and F. Reinicke 2461
Matter, Optical Constants of. C. G. Darwin 829
Maxwell Disc, Spectral Distribution of Mixtures produced by. D. B. Judd .. 818
Mechanical Equivalent of Light, Least. H. E. Ives 1080
Metallic Lustre. Part II. W. D. Bancroft and R. P. Allen 2063
,, Reflection, Phase Differences in. J. Richter 2462
,, Surfaces, Reflection from. I. Ebeling 2064
Mirrors, Coppered-Glass, Preparation of. E. A. H. French 529
" Moiré," Application of, to Study of Mica Deformations. M. Mulot 2263
Moving Source, Light from, *see* sections Rays and Interference.
Mutarotation. R. Kuhn and P. Jacob 339
Natural Light in Metallography, Simulating. H. S. George 819
Neon Tubes, Rectification of Light of. G. Claude 1642
Opalescence of Binary Liquid Mixtures. J. C. K. Rav 328
Optical Phenomena, Quantum Theory of. J. C. Slater 1834
Optically-active Compounds, Compounds of Malic Acid, Copper and Bases, Study of. E. Darmois 828

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Miscellaneous (Light), *continued.*
Optics of System in Motion. G. Valle 2669
Output of Light from Luminous Bodies with Coiled-wire Filaments, Effect of Darkening due to Absorption of Radiation on. E. Lax and I. Runge.. 2499
Pearls, Interior of, New Method of Examining. B. Szilard 1334
Phosphorus, Spectroscopic Study of Luminescent Oxidation of. H. J. Emeléus and W. E. Downey 1091
Photo-Chemical Processes in Dyes, Kinetics of. A. Predwoditeleff and N. Netschajewa 1860
,, Reactions, *see* section Miscellaneous (Chemical Physics).
Photo-elasticity. E. G. Coker 1867
Photography, Single-Spark, and its Application to Problems in Ballistics. P. P. Quayle 1866
Photometry, *see* separate section.
Photosynthesis in Tropical Sunlight. N. R. Dhar and R. P. Sanyal..... 2685
Physical Optics 2061
Pictures, Depth Illusion in. A. Ames, Jr. 1338
Quanta, Electromagnetic Theory of. F. R. Bichowsky 2443
Quantum Radiation, Theory of. P. Jordan 1081
Radiation-Pressure, *see* section Rays and Radiation.
,, Quanta and Ideal Gas Theory. A. Schidlof 1083
Rays, *see* separate section.
Röntgen Rays, *see* section X-Rays.
Rotatory Polarisation, *see* section Polarisation.
Scattering of Light, *see* section Interference.
Scintillations, Relative Brightness of. E. Kara-Michailova and H. Pettersson 1615
Silver Halides, Photomagnetic Properties of. A. Garrison 1748
Solidified Gases, Luminescence of, at Liquid Helium Temperatures. L. Vegard, H. K. Onnes and W. H. Keesom 1892
Stigmatic and Orthoscopic Corrections. C. W. van der Pijl 2249
Tetrahedral Molecule, Calculation of Rotatory Power of. R. de Mallemann.. 2471
Thermionic Effect, Action of Light on. E. Henriot and R. Moens 1719
Transparency, *see* section Absorption.
Ultra-violet Rays, Absorption of, by Skin and its Therapeutical Applications. J. Saidman 1090
Velocity of Light. H. Thirring 1350
,, ,, , Lecture Demonstration of. R. Pohl 1351
,, ,, , New Measurement of. A. A. Michelson 524
X-Rays, *see* section X-Rays.

Molecular Physics, Matter and Ether.

Absorption of Light and Quantum Theory. C. Bialobrzeski 1333
α-Particles, Collision of, with Light Atoms. M. Akiyama 141
Atom, Force Within. G. Green 1822
,, , Stability of. D. N. Mallik 286
,, , Theory of. F. Dacos 2017
Atomic Disintegration. H. Pettersson and G. Kirsch 586
,, ,, due to α-Particles. Part II. Disintegration Products with Short Range. G. Kirsch and H. Pettersson 1679
,, Force Fields. F. S. Brackett 32
,, Nuclei, Studies of. E. Rutherford 1678
,, Numbers and Approach of Ions in Crystal Lattice. A. F. Scott 1551
,, Rays. G. C. Schmidt 98
,, Rays Nomenclature. W. Gerlach 1002
,, Structure, Theory of. P. Jordan 2432
,, Vibration Frequency of Elements of Zero Group (Inert Gases), Approximate Calculation of. J. Narbutt 2310
,, Weight of Antimony, Revision of. P. F. Weatherill 284
,, Weights, Fundamental. E. Moles 1550
,, ,, , International, 1925 1549
Atoms and Electrically-charged Particles. E. Fermi..... 644
,, ,, Isotopes. F. W. Aston 476
,, ,, Molecules, Magnetic Properties of. B. H. Wilsdon..... 1977
,, , Stability of. E. Rutherford 1677
Balmer Law as Equation of Motion. L. Page 1823

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Molecular Physics, Matter and Ether, *continued.*
Balmer Series Lines of Hydrogen, Relative Probabilities of Transitions involved in. F. C. Hoyt 1391
Band-Spectra and Molecular Structure. Y. Takahashi 107
,, , Isotope-Effect in. R. S. Mulliken 1367
,, , ,, ,, . Part II. Spectrum of Boron Monoxide. R. S. Mulliken 1649
,, , Line Intensities in, and Correspondence Principle. R. H. Fowler 1877
Benzene Ring. E. Schröer 1321
Black Body Radiation, Motion of Free Electrons in, and Interaction between Radiation and Matter. G. Breit 1694
Bohr Atom. R. A. Millikan and I. S. Bowen 31
,, ,, , Quantum Statistics of. M. Planck 790
Bohr's Correspondence Principle to Small Quantum Numbers, Extension of. P. W. Ketchum 479
,, ,, ,, , Problem of Quantitative Formulation of. R. C. Tolman 1392
,, Stationary States, Physical Interpretation of. G. P. Thomson 2428
Boron (B_{II}) and Carbon (C_{III}), Series Spectra of Two-Valence-Electron Atoms of I. S. Bowen and R. A. Millikan 2697
,, , Valency of. R. C. Ray 1314
Bose-Einstein Statistics, Demonstrations from. A. Smekal 2547
Bromine, Redetermination of Atomic Weight of. P. L. Robinson and H. V. A. Briscoe 1316
Brownian Movement from Gas Standpoint, Theoretical Calculation of. F. Zeilinger 27
Bucherer's Experiment, New Discussion of. U. Doi 1563
,, ,, ,, ,, ,, . G. A. Schott 2231
,, Experiments on e/m, Interpretation of Results of. T. Lewis 1562
Carbon and Silver, Atomic Weights of. G. Dean 999
Chemical Affinity and Electronic Structure. Non-Polar Bond. B. H. Wilsdon. 1322
,, ,, ,, ,, ,, . Part II. Polar Link. B. H. Wilsdon 1824
,, Constants and Frequencies of the Elements, Numerical Values of. A. C. Egerton 1505
,, Elements, Level Values of X-Ray Spectra of. B. Walter 1114
,, ,, , Mass-Spectra of. Part VI. Accelerated Anode Rays. F. W. Aston 1883
,, ,, , Periodic Structural Regularities of Spectra as related to Periodic Law of. W. F. Meggers 1364
Colloidal Particles of Order of 10^{-5} cm, Individual Radio-active, Electrical Behaviour of. F. Ehrenhaft 1913
Compounds, Carbon, Electron Displacement in. H. J. Lucas and A. Y. Jameson 290
Constant i of the Thermodynamic Vapour-Pressure Equation for Molecules containing more than one Atom. A. Eucken, E. Karwat and F. Fried 165
,, N of Avogadro. P. L. du Noüy 2614
,, ,, ,, ,, , New Determination of. L. M. Alexander 1752
,, ,, ,, ,, ,, ,, , based on its Definition. P. L. du Noüy 431
Correspondence Principle, Application of, to Degenerate Systems and Relative Intensities of Band Lines. E. C. Kemble 1368
Coulomb's Law and Hydrogen Spectrum. E B. Wilson 634
Crystal Structure, *see* separate section.
CuH Molecule and its Band-Spectrum. H. Bell 1098
Degenerate Systems, Quantum Dynamics of. A. M. Mosharrafa 1312
Dielectric Relations and Molecular Association. Luise Lange 2756
Dipole Molecules and Chemical Meaning of Orientation Polarisation, Magnitude of Electrical Moments of. L. Ebert 1001
Direction Quantisation in Magnetic Field. W. Gerlach 1494
Doppler Principle and Bohr's Frequency Condition. P. A. M. Dirac 106
Electric Charge, Motion of. A. Bramley 1700
,, Moment of Gaseous Molecules of Halogen Hydrides. C. T. Zahn 608
,, Moments of Molecules of Mono-Carboxylic Acids and their Esters. C. P. Smyth 2431

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Molecular Physics, Matter and Ether, *continued.*

Electric Moments of Typical Organic Molecules. C. P. Smyth 287
Electrified Spherical Corpuscles. L. Décombe 787
Electro-dynamics, Stationary Motions in. U. Crudeli 791
Electromagnetic Field and Atomic Radiation, Affine Asymmetrical Theory of. H. Eyraud 1937
,, Laws and Quantum Theory. H. A. Senftleben 1699
Electron and Light-Quantum from the Experimental Point of View. R. A. Millikan 2027
,, Discharge produced by X-Rays, Asymmetry of. W. Seitz 580
,, -Groups in the Atom, Relation between Closing in of, and Structure of Complexes in Spectrum. W. Pauli, Jr. 1875
,, Orbits, Harmonic Analysis of. F. C. Hoyt 1326
,, ,, , Possible Reconciliation of Bohr's Interpenetration Ideas with Sommerfeld's Relativistic Treatment of. R. A. Millikan and I. S. Bowen 1825
,, Reflection in Gases: Researches on Hydrogen. H. Baerwald 2136
,, Tables. G. Fournier 1004
,, , Free, in Field of Plane Electromagnetic Wave, Motion of. J. Frenkel 1671
,, , Intrinsic Frequency of. L. de Broglie 1561
,, , Nature of Evidence for Divisibility of. R. A. Millikan 2559
,, , Proof of Invariance under Lorentz Transformation of Equation of Motion of. L. Page 793
,, , Theory of. H. Reissner 1827
Electronic Orbits, Stationary, and Method of Special Functions. K. Lanczos 2425
Electrons in Mercury-Vapour, Controlled Orbital Transfers of. R. W. Wood 841
,, , Distribution of, among Atomic Levels. E. C. Stoner 38
,, , Free, Within a Metal, Number of. E. H. Hall 1324
,, , Heat of Evaporation of. J. J. Weigle 1467
,, , Momentum imparted to, by Radiation. E. O. Hulburt and G. Breit 1325
,, , ,, , *see* section Electromagnetic Theory.
Elements, Physical System of. C. G. Bedreag 291
Emission, Thermionic, with Temperature and Concentration of Free Electrons within Conductors, Variation of. A. T. Waterman 646
Ether-Drag and Astronomical Aberration. E. Brylinski 484
,, Drift. F. Zerner 2240
,, ,, Experiments at Mount Wilson. D. C. Miller 2438
,, Radiation in Spatially Closed World, Problem of. K. Lanczos 1574
,, , Electrical Constitution of. M. le Besnerais and R. Ferrier 1327
,, , Flowing, Theory of. O. Wiener 1007
,, , Force-Free Flowing, Elastic Vibrations in. O. Wiener 761
,, , Propagation of Action in. G. Fournier 1829
Excited Atoms, Duration of Life of. W. Gerlach and W. Schütz 1000
Fatty Acids, Molecular Orientation of. J. J. Trillat 1006
Gas Mixture, Effect of Molecular Attractions on Total Pressure of. O. Maass and D. M. Morrison 899
Helium and Neon, Atomic Fields of. J. E. Jones 1003
,, , Static Model for. H. S. Allen 792
Hg Molecules, Determination of Heat of Dissociation of, from Band-Spectrum of Hg Vapour. E. Koernicke 2318
Huyghens' Optics and Theory of Relativity. W. Rivier 797
Hydrogen Atom with Nucleus in Motion, Circular Orbits in. E. Reichenbächer 2021
,, , Atomic Model for. A. C. Crehore 1821
,, , Heat of Rotation of. E. Schrödinger 1370
Inelastic Atomic and Molecular Impact: Review Lectures on Theme. M. Bodenstein and J. Franck 2389
Interference and Dynamics of Light Quanta. L. de Broglie 824
Ionisation Problems, Application of Positive Ray Analysis to. H. D. Smyth . 926
Ions and Molecules, Refraction and Electron Constraint in. C. P. Smyth 2429
Isotope Effect in Band-Spectra. III. Spectrum of Copper Iodide as excited by Active Nitrogen. R. S. Mulliken 2707
Isotopes and Fine Structure of Mercury Lines. H. Nagaoka, Y. Sugiura and T. Mishima 33
,, of Chlorine and Magnesium, Attempted Electrolytic Separation of. J. E. G. Pilley 1828
,, of Lead. H. Brennen 1005

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Molecular Physics, Matter and Ether, *continued.*

Isotopes of Lead. Bertha Perrette 2023
,, ,, Mercury. F. Stumpf 477
,, , Halogen, and Infra-red Reflection Spectra. A. H. Pfund 1383
,, , Mass-Ratio of. F. M. Jaeger and D. W. Dijkstra 35
,, , Separation of, by Ionic Migration Method. J. Kendall and J. F. White 478
Isotopy, Spectroscopic Evidence of. H. Nagaoka and Y. Sugiura 34
Kernels of Ten Electrons of Na, Mg, Al and Si derived from the Homologous Spectra. L. A. Turner 67
Lattice Energy of Crystals, Measurement of. W. Wessel 466
Light, Structure of. J. J. Thomson 1938
Liquid Chains, Thermodynamics and Kinetics of. H. Schiller 717
Lubricating Oils, Measurement of Effectiveness of. R. v. Dallwitz-Wegner.. 257
Lubrication, Boundary: Influence of Composition of the Solid Face. I. Doubleday 256
Magnetic Moments of Atoms, Calculation of. N. Semenoff 473
,, State and Variation of Atomic Moment, Equation of. P. Weiss 1493
Magneton Numbers, Spectroscopic, Significance of. E. C. Stoner 1979
,, , Theory of, taking into Account Variation of Mass of Electron with Velocity. L. Page 2349
Mass, Alteration of, when Protons are closely packed. W. A. Plotnikow 36
Matter and Radiation. O Lodge 1328
,, ,, ,, , Equilibrium between. O. Stern 2724
Mean Free Path of Uncharged Silver Atoms in Nitrogen, Direct Measurement of. F. Bielz 1552
Mechanics, Newtonian and Light Quanta. K. Schaposchnikow 776
Mechanical Correspondence Principle, Statement of. P. Tartakowsky 285
Metallic Conduction and Scattering of Electrons by Atoms, Kinetic Theory of. E. L. Davies and G. H. Livens 1724
Metals, Contribution to Theory of. J. Frenkel 472
Methyl Chloride, Compressibility and Molecular Weight of. T. Batuecas 2208
Michelson Experiment. G. Valle 1872
,, ,, and Relativity. A. Metz and E. Brylinski 483
,, ,, : Possible Thermic Perturbation. E. Brylinski 482
Mixed Solvents, Molecular Weight Determination in. C. Drucker 2618
Molecular Diameter, Calculation of, from Heat of Vaporisation and Surface Tension. H. Sirk 474
,, Diameters. H Sirk 1819
,, ,, from Surface-tension Measurements. S. Mokroushin .. 37
,, Fields, Determination of. I. Variation of Viscosity of Gas with Temperature. J. E. Jones 288
,, ,, , ,, . II. Equation of State of a Gas. J. E. Jones 289
,, ,, , ,, . III. Crystal Measurements and Kinetic Theory Data. J. E. Jones 789
,, Forces and Heat of Vaporisation and Surface Tension of a Liquid Relation between. J. J. Plácinteanu 475
,, Interaction in Liquid State, Theory of. G. N. Antonoff 2126
,, Weight and Compressibility of Methyl Ether. T. Batuecas 3
,, ,, ,, Solution. W. D. Bancroft 2770
Molecules, Formation and Breaking-up of. M. Polányi and E. Wigner 2430
,, , Quantum Theory and Formation of. M. Born and J. Franck 1323
Monatomic Perfect Gas, Quantum Theory of. A. Einstein 159
Multiple X-Ray Ionisation of Light Atoms, Energies of. L. A. Turner..... 2519
Multiply-Periodic Systems, Two-coupled, Statistics of Quantum Theory and Theory of Dispersion, Remarks on. G. Breit 2643
NH_3 Molecule, Over- and Combination-Oscillation of. G. Hettner..... 1372
Number N and Certain Molecular Dimensions, New Method of Determining, based on Study of Surface Equilibrium of Colloidal Solutions. P. L. du Noüy 2769
Optical Phenomena, Quantum Theory of. J. C. Slater 1834
,, Screening-Constant Regularities. A. C. Menzies 2496
Organic Compounds, Liquid, Theoretical Stoichiometry of Space occupied, and Intermolecular Forces in. I and II. E. Wöhlisch 1553
Periodic System and Elements which are Electronic Isomers. R. Swinne ... 2426
,, ,, , Theory of. A. Sommerfeld 1393
Physics, Trend of Thought in. W. F. G. Swann 2018

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Molecular Physics, Matter and Ether, *continued.*

Planck Radiation Law for Atoms with Two Degrees of Freedom, Derivation of. K. F. Niessen 557
Planck's Law, Light Quanta and Coherence. A. Landé 2546
Point-Electrons, Electro-dynamics of. J. Frenkel 1826
Polyatomic Polar Molecules, Shape of. I and II. F. Hund 1558
PP' Groups in Atoms of same Electronic Structure, Relations of. I. S. Bowen and R. A. Millikan 2495
Protons from Nitrogen Nuclei photographed by Wilson Method, Ejection of. P. M. S. Blackett 1680
Quanta and Electric Forces. J. H. Jeans 1560
,, , Electromagnetic Theory of. F. R. Bichowsky 2443
,, , Remarks on Theory of. G. Juvet 1559
Quantisation, Weak. P. Ehrenfest and R. C. Tolman 29
Quantised World-Lines of Electrons of Hydrogen Atoms, World-Geometry Characteristics indicated by. E. Reichenbächer 1820
Quantising Systems containing Identical Elements. E. Fermi 162
Quantum-Atoms and Vacuum-Radiation, Thermal Equilibrium between. P. Jordan, Einstein 2640
,, Conditions. G. Wataghin 2028
,, Defect and Atomic Number. D. R. Hartree 1315
,, ,, ,, ,, . L. A. Turner 28
,, Emission, Resonance Mechanism of. L. de Broglie 30
,, Equivalent by Photoelectric Conduction in Rock-Salt Crystals. Z. Gyulai 1968
,, Orbits in Atoms of Alkali Metals, Distribution of Probabilities of Passages between. H. Bartels 2022
,, Radiation, Theory of, Note on P. Jordan's Treatise. A. Einstein .. 1870
,, Relations in Series Spectra. R. B. Lindsay 2639
,, Theory. L. de Broglie 1329
,, ,, Postulates, Certain. D. N. Mallik 2642
,, Transitions in Band-Spectra, Three-Dimensional Method of representing. H. B. Lemon and C. M. Blackburn 2689
Radiation, Structure of. E. C. Stoner 1871
Radical Theory in Modern Chemistry. C. A. Kraus 292
Recoil Effect of Electrons which Scatter γ-Rays. D. Skobelzyn 143
,, of Radio-active Atoms. M. Akiyama 142
Relativistic Fine-structure. G. Wentzel 2494
Rhombic uniformly Rotating Systems in Electronic Dynamics. U. Crudeli .. 1313
Rydberg-Ritz Equation, Constants of. J. H. Jones and J. C. Boyce 481
Scattering of Radiation by Atoms. H. A. Kramers and W. Heisenberg 1632
Secondary Electrons emitted by Elements of Low Atomic Weight. H. Fricke and O. Glasser 573
,, Electrons Produced by Hard X-Rays in Light Elements. H. Fricke and O. Glasser 876
Selection Principle and Needle Radiation. Erna Weber 2079
Simultaneous Jumping of Two Electrons in Bohr's Model. P. S. Epstein 480
Solid Dielectrics, Theory of Cohesion Forces in. J. Frenkel 283
Space Quantisation of Atoms, Proposed Test of. A. E. Ruark and G. Breit . 1495
Spark Potential and Kathode Fall. H. Stücklen 189
Spectra Resembling that of Hydrogen and Capacity for Polarisation of Trunk of Atom. E. Schrödinger 2284
Spectral Lines, Excitation of, by Electronic Impact. II. G. Hertz and J. C. S. de Visser 1876
,, Lines, Quantum Theory and Displacement of. J. Kudar 1365
,, ,, , Theory of Relation of, to Mass Variations within the Atom. L. B. Ham 2019
Spectrum of Radiant Energy, Continuity of. G. Gueben 104
Statistical Equilibrium between Atoms, Electrons and Radiation, Conditions for. P. A. M. Dirac 411
Steady Flow of a Gas in Two Dimensions. S. Lees 158
Stripped Atoms of Phosphorus (P_V), Sulphur (S_{VI}) and Chlorine (Cl_{VI}), Series Spectra of. I. S. Bowen and R. A. Millikan 1902
Structure of Light, Suggestion as to. J. J. Thomson 177
,, , Fine, Sommerfeld's Theory of from Standpoint of General Relativity. M. S. Vallarta 1874

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Molecular Physics, Matter and Ether, *continued.*

Sub-Electron Question, Mathematical Statistical Investigation of. H. Daecke 788
,, Electrons, Investigation concerning. H. Daecke 2427
Substituents, Influence of, on Chemical and Physical Properties. H. G. Rule and T. R. Patterson 442
Thermic Emission of Electrically-charged Particles. H. J. Spanner 647
Time Periodic World and New Treatment of Problem of Ether Radiation. K. Lanczos 1573
Transition Probabilities, Relative, in Sodium Atom, Experimental Determination of. G. R. Harrison 2097
Two-Electron Jumps, Spectral Lines due to. R. A. Millikan and I. S. Bowen.. 2300
,, -Valence-Electron Atoms of Phosphorus (P_{IV}), Sulphur (S_V), and Chlorine (Cl_{VI}), Series Spectra of. I. S. Bowen and R. A. Millikan 1903
Valence of the Rare Earths on Bohr's Theory. F. Zambonini 294
Valency, Suggestions for Magnetic Theory of. A. P. Laurie 293
Vaporisation, Kinetic Theory of. S. C. Bradford 164
Weber's Formula for Calculation of the Deviation of Luminous Rays, Application of. Fournier 295
X-Rays in Crystals, Atomic Structure Factor in Intensity of Reflection of. D. R. Hartree 2020
,, , Soft, and Secondary Electrons. J. A. Becker 583
Zeeman-Effect and Dependence of Electron Mass on Velocity. W. Pauli, Jr... 1410

Oscillations and Waves (Electric), *see also* Rays and Discharge and Section Telegraphy (Wireless) in Section B.

Amplification, Measurement of. W. Wolff 1472
Atmospheric Disturbances and Radio Vibrations, Systems which behave differently with. G. Stetter 1473
Coupled Circuits, Resonance of. L. Ollat 2147
Electric and Magnetic Spectroscopy. W. Arkadiew 2350
,, Waves Round the Earth, Propagation of. A. Meissner 429B
,, ,, , Short, obtained by Secondary Emission in Triodes. E. W. B. Gill and J. H. Morrell 1471
Electromagnetic Perturbation, Propagation and Distortion of. A. Dufour ... 2346
,, Waves at Hertzian Lattices, Reflection of. W. Arkadiew .. 197
,, ,, along Wires. G. Laville 199
Electrons, Motion of, between Coaxial Cylinders under Influence of Current along the Axis. A. W. Hull 2138
End-Effect for Stationary Electromagnetic Oscillations in Line Resonator. C. Gutton and E. Pierret 2584
Field Intensity Measurements in Washington on the Radio Corporation Stations at New Brunswick and Tuckerton, New Jersey. L. W. Austin 676
Frequency Multiplication, Theory of. O. Emersleben 1191
,, Transformation. W. Dornig 139B
Gridless Receiving and Amplifying Valves with Control Plates. H. Cohn 650
Iron, Perfectly Insulated, Explanation of Surface Effect in Propagation of Electric Waves in. A. Léauté 927
Mesny's Polyphase Generator, Application of. J. Bethenod 1805B
Oscillating Circuits, General Method of Determining Constants of. F. Müller 1722
Oscillation Hysteresis (" Ziehens "). W. Albersheim 433B
,, Phenomena in Gas Discharges of Different Kinds. F. Schroeter.. 2738
Oscillations, Polyphase, Generation of by Means of Electron Tubes. R. Mesny 2582
Oscillator, Electronic Tube, Secondary Oscillations in. O. M. Corbino and E. Persico 1960
Potential Waves along Conductors. W. Rogowski and E. Flegler 2143
Radio Waves over Earth, Propagation of. H. W. Nichols and J. C. Schelleng 1723
Richardson-Effect. D. Reichinstein 1721
Rotation of Plane of Polarisation of Electromagnetic Waves by Tetrahedral Model. K. F. Lindman 2585
Short Electromagnetic Waves, Device for Demonstrating. R. M. Fisher 2146
,, Wave-Length Oscillations in Electron Tubes, Method of Producing. G. Breit 1190
,, Waves, Absorption of. J. Granier 1189
,, ,, , Amplification of. H. Riegger and F. Trendelenburg 648
,, ,, , Irregularities of Propagation of. P. Lardry 198
,, ,, , Propagation of. M. Lardry 2144

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Oscillations and Waves (Electric), *see also* Rays and Discharge and Section Telegraphy (Wireless) in Section B, *continued.*

Spark Constants and Waves on Wires. M. Toepler 1470
Standing Electric Waves on Parallel Wires. W. S. Huxford 2142
Systems with Disturbed Superposition, Self-exciting Phenomena in. K. Heegner 173
Three-Element Tubes, Formulæ for Amplification Constant for. F. B. Vogdes and F. R. Elder 929
Transmitted and Reflected Electric Waves at Interface between two Media, Condition that Ratio of Intensities of, is Independent of their Plane of Polarisation. H. M. Macdonald 2586
Triode Circuits, Two, Analysis of. J. H. Morecroft and A. G. Jensen 140B
,, Valve Oscillators, Variations of Frequency and Amplitude of Oscillations generated by. Y. Watanabe 1504B
Triodes, Electron Paths in. B. van der Pol 1503B
Tungar Rectifier, Oscillations produced by Means of. Y. Watanabe 2347
Two-Layer Coil, Short, Determination of Free Period of. A. Goosmann ... 1192
Vacuum Tubes, Passage of Electricity through. R. Whiddington 2141
Valve Generators for Very Short Waves, Theory of. J. Sahánek 2145
,, Oscillator, Push-Pull. D. C. Prince and F. B. Vogdes 214
,, Oscillators and Extremely Short Waves, Harmonics of. C. Gutton and E. Pierret 2348
Valves Transmitting, Characteristics (Reissdiagramme) of. H. Rukop 649
Wavemeter. Absolute Frequency of Electric Vibration. E. Giebe and E. Alberti 1969
Waves, Travelling, Measurement of Gradient of. E. Marx 138B
Wireless Electric Rays round the Earth. J. Larmor 428B
Wireless Telegraphy, *see* section B.

Osmosis.

Albumin from Globulin, Apparatus for Separating. A. Brossa 461
Electro-Endosmosis. Part I. F. Fairbrother and H. Mastin 1263
,, . Part II. F. Fairbrother 1264
,, . Part III. F. Fairbrother and H. Mastin 1530
Electro-osmotic Experiments on Intensity of Absorption of Constituent Ion by an Insoluble Salt. Part I. J. N. Mukherjee and H. L. Ray 1500
Osmotic Pressure by Solubility Method in Concentrated Solutions. M. P. Applebey and P. G. Davies 2410
,, Pressure of Hæmoglobin. G. S. Adair 2209
,, ,, , Imbibition Pressure and Absorption, Relation between. M. Polányi 1229

Phosphorescence and Fluorescence.

Benzol Vapour under Monochromatic Excitation, Fluorescence of. P. Pringsheim and A. L. Reimann 97
Chemiluminescence and Heteropolar Combination. A. Petrikaln 2076
Doppler Effect during Transformation of Resonance Fluorescence at Reflection. W. Rump 348
Dyestuff Solutions, Polarised Fluorescence of. S. J. Wawilow 2488
,, ,, ,, Fluorescent Light from. F. Weigert and J. Käppler 2489
Energy Relations of Phosphorescence. F. Schmieder 2487
Fluorescence and Phosphorescence by Radiation from Carbon Arc Lamp, Production of. W. S. Andrews 2688
,, and Wave-Length. S. J. Wawiloff, S. Valentiner and M. Rössiger 1868
,, in Colour Solutions at Great Concentrations, Diminution of. S. J. Wawilow 1638
,, Light, Correspondence Principle and Polarisation of. W. Heisenberg 1358
,, , Polarised (Influence of Viscosity), Theory of. F. Perrin 1359
,, , Resonance, by Mercury-Vapour, Extinction of. H. A. Stuart .. 2077
,, , Sensitised. K. Donat 556
,, , Theory of Production of. A. Predwoditelew 2490
Fluorescent Light in Emitting Substance, Absorption of. T. Duseberg 1639
Fluorite, Effect of Heat Treatment upon Kathodo-Phosphorescence of. F. G. Wick and J. M. Gleason 837

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Phosphorescence and Fluorescence, *continued.*

Fluorite, Kathodo-luminescence of. F. G. Wick 105
Luminescence. W. S. Andrews 1022B
Mercury-Vapour, Duration of Fluorescence of. R. H. Ghosh 2687
,, , Resonance Fluorescence of 1849 Å., Line of. W. Rump .. 1869
Phosphorescence Excitation by H. F. Radiation. E. Rupp 96
,, of Rare Earth Elements in Phosphorescent Alkaline Earths, Characteristics of. Part II. R. Tomaschek 555
,, , Influence of Basic Material on Emission of. R. Tomaschek 1079
Phosphorus, Luminescence of, by Magnetic and Electric Fields. E. Rupp.... 95
Scattered and Fluorescent Light, Polarisation of. L. Nordheim 2491

Photo-Electricity.

Alkali Metals and their Alloys, Normal and Selective Photoelectric Effects in. H. E. Ives and A. L. Johnsrud 660
,, Metals, Photoelectric Properties of Thin Films of. H. E. Ives 661
Crystals, Electronic Conduction in. B. Gudden and R. Pohl 2590
Dyes, Relation of Thickness of Layer to Photoelectric Effect in. A. Predwoditelew and N. Netchaewa 663
γ-Spectra, Characteristic, and their Photoelectric Effect. J. Thibaud 1917
Halides of Silver, Photovoltaicity of, and Mechanism of Formation of Latent Image. R. Audubert 932
Hall-Effect of Photoelectric Primary Current in Non-conducting Crystals. H. Lenz 202
Mercury, Capillary and Photoelectric Properties of. J. G. Popesco 2413
NaCl Crystals, Photoelectric Conduction in. Z. Gyulai 1481
Phosphorescence Excitation by H.F. Radiation. E. Rupp 96
Photoelectric Action, Mechanism of. S. Ray 2345
,, Cells—Case High-Vacuum Type. C. F. Elwell 933
,, Effect in Mercury, Long Wave-length Limit of. Sophie Taubes. 1728
,, ,, with Sub-Microscopic Mercury Spheres. E. Wasser..... 204
,, ,, , Influence of Temperature upon. J. R. Nielsen 1197
,, ,, , Selective, in Metallic Layers. F. Gross 1729
,, Emission and Electric Conductivity of Platinum, Effect of Gas Absorption on. K. Herrmann 2572
,, ,, . Effect of Kathode Rays on. H. Dember 2574
,, Primary Current in Crystals, Mechanism of. B. Gudden and R. Pohl 662
,, ,, ,, in NaCl Crystals. B. Gudden and R. Pohl .. 1967
,, ,, Currents in Crystals. W. Flechsig 2754
,, Response of Potassium at Low Temperatures. J. W. Hornbeck 1198
,, Thresholds of Elements under Ordinary Conditions. R. Hamer 205
Photoelectrically Sensitive Crystals, Passage of Electrons through. H. Lenz.. 2755
Photoelectrons emitted from Thin Platinum Films, Incident and Emergent Velocities of. Chien Cha 1199
,, , Experimental Study of Direction of Emission of. P. Auger . 2340
,, , Longitudinal Asymmetry in Direction of Ejection of. O. K. DeFoe 1958
,, , Quantum Theory on Asymmetries in Direction of Ejection of. F. W. Bubb 1959
,, , Red Limit and Emission Energy of. R. Suhrmann 2337
Photo-voltaic Phenomena. R. Audubert 206
Potassium Vapour, Photoelectric Effect, as Function of the Frequency of Light. E. O. Lawrence 2339
Quantum Equivalent by Photoelectric Conduction in Rock-salt Crystals. Z. Gyulai 1968
Saha's Ionisation Formula and Theoretical Value of Photoelectric Absorption Coefficient. E. A. Milne 2575
Selenium Contact Rectifiers, Effect of Light on Behaviour of. E. Merritt.... 2753
,, , Photoelectric Emission from. W. del Regno 664
Silver Iodide Photo-voltaic Cell, New Type of. A. Garrison 1196
Thermionic Work-functions and Photoelectric Thresholds of Alkali Metals. O. W. Richardson and A. F. A. Young 1720
Three and Four-electrode Valves, some Applications of, to Photoelectric Cells. G. Ferrié 1733

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Photo-Electricity, *continued.*
Total Photo-Current from Sodium with Temperature Change 20° to − 190°, Constancy of. R. C. Burt 2152
Weak Currents and their Application to Photoelectric Cells, Amplification of. G. Ferrié, R. Jouaust and R. Mesny 2588

Photography.
Aeronautics, Kinematographic Study of. K. Terazawa, K. Yamazaki and Y. Akishino 548
Apparatus, *see* separate section.
Aqueous Solutions of Potassium Iodide, Nitrate and Chlorate, Influence of Light on. K. Suryanarayana 91
Archæology from the Air. O. G. S. Crawford 345
Blackening Law with Pigments. V. Richter 552
Camera, Recording, taking Short Lengths of Film. J. S. G. Thomas and E. Simeon 1620
Cinematography, Colour, Friese-Greene Process of. C. H. Friese-Greene 2074
Colour Photography, Instantaneous. G. A. Rousseau 2681
Densitometers, Precision, for Photographic Photometry. G. R. Harrison 1345
Desensitisers, Photographic, and Distortions on Plates due to Local Desensitising, Characteristics of. F. E. Ross 2680
Emulsion Fog, Photographic, to Grain Size, Relationship of. A. P. H. Trivelli, E. P. Wightman and S. E. Sheppard 1637
,, Ripening. Lüppo-Cramer 836
Emulsions, Modern Views on Sensitivity of. T. S. Price 1864
"Entzerrung" Arrangement, New Semi-automatic, for Topographical Use. C. Aschenbrenner 2261
Explosion, Spark Photography as Means of Measuring Rate of. J. E. Smith.. 2131
Ferrous Ferric Iodine Iodide Equilibrium, Action of Light on. E. K. Rideal and E. G. Williams 1078
Fog Correction in Photographic Densities. R. B. Wilsey 2684
Gaseous Sulphur Dioxide, Photo-Chemical Decomposition of. R. A. Hill 93
Gelatine on Rigid Supports, Instrument for Measuring Swelling of. S. E. Sheppard and F. A. Elliott 246
,, , Photographic. S. E. Sheppard 2270
Hydrogen Bromide, Photochemical Formation of, and Velocity of Formation of Bromine Molecule from Atoms. M. Bodenstein and H. Lütkemeyer .. 831
Intensities, Determination of, on Photographic Plates. G. Hansen 1355
Intensity Ratio in System Debye-Scherrer-Ringen: Its Use in Investigation of Photographic Processes. R. Blunck and P. P. Koch 2682
Kinematography with Continuous Movement of Film. J. Barot 1075
Latent Fog. Lüppo-Cramer 1865
,, Photographic Image, History and Theory of. Lüppo-Cramer 832
,, ,, ,, , Investigations on. Part I. F. C. Toy and H. A. Edgerton 92
,, ,, ,, , Use of Commercial Plates in Research on. F. C. Toy 1863
Lenses and Objectives, *see* separate section.
Mass Rays, Photographic Plates for Detection of. F. W. Aston..... 1622
Microbalance, Studies with. Part I. Photochemical Decomposition of Silver Bromide. E. J. Hartung 347
Micro-Camera, Multi-Lens Automatic. A. J. Dalladay, J. P. Anderson and F. F. S. Bryson 1621
Pearls, Interior of, New Method of Examining. B. Szilard 1334
Photo-elasticity. E. G. Coker 1867
Photographic Blackening. E. Stenger and G. v. Kujawa 834
,, ,, Curve. W. Meidinger 835
,, ,, Curves, Parallelism of. W. J. Beekman and F. Oudt 551
,, ,, , Variability of, and Measurements with Martins Photometer. K. Schaum 553
,, Film by X-Rays, Blackening of. J. K. Robertson and J. T. Thwaites 833
,, Photometry. J. Flügge and W. Ewald 2271
,, Plates at Low Densities, Blackening of. E. A. Baker 1862
,, ,, for the Infra-red Ray, Sensitising Action of Heat on. O. Masaki..... 94

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Photography, *continued.*

Photographic Recorder for Temperature and other Physical Quantities. W. H. Stannard and P. E. Klopsteg 340
,, Sensitivity, Studies in. IV. Effect of Oxidisers on Sensitivity and on Latent Image. S. E. Sheppard, E. P. Wightman and A. P. H. Trivelli 549
,, ,, ,, . V. Action of Arsenite and Oxidising Agents on Sensitivity. S. E. Sheppard, E. P. Wightman and A. P. H. Trivelli 550
,, ,, ,, . VI. Formation of Latent Image. S. E. Sheppard, A. P. H. Trivelli and R. P. Loveland 2269
,, ,, , Theory of. T. S. Price and S. O. Rawling 2486
Photography in Modern Engineering, with Special reference to Photomicrography, Applications of. A. Logan 1356
Quartz Mercury Lamp as Photo-Chemical Light Source. L. Reeve 1179
Radiant Energy from a Phototropically-treated Compound, Nature of. Y. Venkataramaiah and A. Janakiram 90
Reversal Phenomena, Photographic, Properties of. H. Arens 1077
Sensitometer, New Non-intermittent. A. C. Hardy 1344
Sensitometry, Photographic, with Fluorescent Oils. G. R. Harrison 2683
Silver Bromide Grain during Development, Conditions governing Behaviour of. L. F. Davidson 1354
,, Compounds, Photo-Chemistry of. J. Eggert and W. Noddack 1635
,, Halide Emulsions, Proof of Quantum Equivalent Law in. J. Eggert and W. Noddack 1636
,, in the Photograph. Lüppo-Cramer 2485
,, , Separation of, from Silver Halides by Intensive Lighting. P. P. Koch and H. Vogler 2686
Sky, Whole, Apparatus to Photograph. C. Beck 1059
Solarisation, Studies in. Lüppo-Cramer 554
Spark Discharge, Electric, Actinic Action of. F. Berger 1944
Spectrophotometry, Photographic, New Method for. L. A. Jones 2075
Spectrum Analysis, Photography in. T. T. Baker 1644
Standard Development. W. Clark 1357
String Galvanometer Oscillograph with Automatic Photography. A. Trowbridge 419
Telephotographic Lens, Applications of. E. Marriage 2260
,, ,, , Principles and Construction of. H. W. Lee 2259
Ultra-violet Light Energy required to render Developable a Grain of Photographic Silver Bromide, Average Quantity of. P. S. Helmick 346
,, , Absorption Measurements in, by Photographic Photometry. H. Ley and F. Volbert 520

Photometry.

After-Images, Recurrence and Decay of. Winifred J. Smith 1617
Contrast Sensitivity of Fovea, Effect of Peripheral Illumination of Retina on. S. A. Emerson and L. C. Martin 2250
Electro-Microphotometer, New, of Tübingen Observatory (Oesterberg). H. Rosenberg 2257
Filter, Spectral White-light. H. Naumann 2465
Heterochromatic Photometry. C. Fabry 88
,, ,, . W. Ewald 2272
,, ,, , Basis of. C. Schaefer 1076
,, ,, , Test Solutions for. K. S. Gibson 1633
,, ,, , Use of Coloured Screens in. R. Jouaust 89
Industrial and Technical Photometry, *see* section B.
Inorganic Halides, Absorption of Ultra-violet Light by. F. H. Getman 2251
Microphotometer, Recording, with Photoelectric Cell. P. Lambert and D. Chalonge 1625
Photo-Chemical Processes in Dyes, Kinetics of. A. Predwoditeleff and N. Netschajewa 1860
Photoelectric Photometry. R. Jouaust and P. Waguet 1353
Photographic Photometry, *see* section Photography.
Photometers, *see* section Apparatus and Instruments.
Photometric Comparator. C. Pulfrich 1626
Scintillations, Relative Brightness of. E. Kara-Michailova and H. Pettersson 1615

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Photometry, *continued.*
Spectrophotometry 1352
,, , Visual, Equipment for. J. Guild 2258
Tungsten and Candle-power of Black Body, Characteristics of. C. Zwikker 2663
Visual Acuity and Colour. M. Luckiesh and F. K. Moss 1616

Polarisation (Electric Waves).
Rotation of Plane of Polarisation of Electromagnetic Waves by Tetrahedral Model. K. F. Lindman 2585
Transmitted and Reflected Electric Waves at Interface between Two Media, Condition that Ratio of Intensities of, is Independent of their Plane of Polarisation. H. M. Macdonald 2586

Polarisation (Electrolytic).
Aluminium Valve, Oscillograph Study of. F. H. Newman 1971
Crystal Rectification of Alternating Currents. A. C. James 1962
Electrolytic Polarisation. Part I. Kathodic Overvoltage of Lead. S. Glasstone 462
,, ,, . Part II. Kathodic Overvoltage of Mercury. S. Glasstone 1272
,, ,, . Part III. Diffusion Layer. S. Glasstone 2795
Overvoltage, *see also* section Electrolysis.
Passivity, *see also* section Electrolysis.
Sulphur, Liquid, Electrical Properties of. D. H. Black 937

Polarisation (Light, including Magnetic Rotation).
Ammonium Di-molybdo-malate, Properties of. E. Darmois and A. Honnelaitre 85
Anisotropic Liquids, Contributions to Theory of. C. W. Oseen 2005
,, ,, , Further Contribution to Theory of. C. W. Oseen 765
Calcspar Lenses as Polarisers. H. Schulz 2258
,, ,, ,, ,, for Strong Beams of Light, Use of. W. Schütz .. 2067
Chemically Homologous Series, Optical Properties of. A. Krethlow 2470
Cholesterol Substances, Rotatory Power of. Royer 1074
Deep Slits, Intensity and Polarisation of Light after Passage through. L. P. Sieg 84
Depolarisation of Light by Diffuse Reflection. G. P. Woronkoff and G. I. Pokrowski 2679
Diffusion of Light in Fluids. Y. Rocard 1069
Fluorescence Light, Correspondence Principle and Polarisation of. W. Heisenberg 1358
,, , Polarised (Influence of Viscosity), Theory of. F. Perrin 1359
Depolarisation of Light in Optically Non-homogeneous Media. G. I. Pokrowski 2071
Diffusion of Light and Kerr Constant. R. de Mallemann 2265
Gelatin, Physico-Chemical Properties of, Rotary Power. F. Vlès and E. Vellinger 1629
Iodo-Succinimide, Crytallographic and Optical Properties of. A. E. H. Tutton 2228
Magnesium and Zinc Crystals, Optical Constants of. M. E. Graber 2665
Organic Compounds, Simple Dispersion in 1-Methylcyclohexylidene-4-Acetic Acid, Rotatory Dispersive Power of. E. M. Richards and T. M. Lowry 1073
,, Vapours, Polarisation of Light scattered by. A. S. Ganesan 1857
Paramagnetic Solutions, Magnetic Rotary Dispersion in. R. W. Roberts 1342
Phosphorus, Luminescence of, by Magnetic and Electric Fields. E. Rupp ... 95
Polarisation Experiment of Wood and Ellett, Theoretical Interpretation of. J. A. Eldridge 83
,, of Light by Reflection at Diffuse Reflecting Bodies. G. P. Woronkoff and G. J. Pokrowski 545
,, ,, from Sky and Sun's Altitude. J. J. Tichanowsky 544
Polarised Resonance Radiation in Weak Magnetic Fields. R. W. Wood and A. Ellett 99
Resonance Radiation in Magnetic Fields, Polarisation of. A. Ellett 838
,, ,, , Effect of Magnetic Fields upon Polarisation of. F. Rasetti 335
,, ,, , Influence of Magnetic Fields on Polarisation of. W. Hanle 839

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Polarisation (Light, including Magnetic Rotation), *continued.*
Rotatory Dispersion of Derivatives of Tartaric Acid. Part I. Methylene Derivatives. P. C. Austin and V. A. Carpenter 337
,, Dispersive Power of Organic Compounds. Octyl Alcohol and Octyl Oxalate. T. M. Lowry and E. M. Richards 86
,, Power, Influence of Solvents on. R. Lucas 2264
Scattered Light, Polarisation of, and Molecular Optical Anisotropy. K. R. Ramanathan 1856
Sodium Light, Polarisation of. W. Kossel and C. Gerthsen 2481
,, Resonance Radiation in Magnetic Fields, Polarisation of. Larmor Precession of Excited Atoms. A. Ellett 1873
Tartaric Acid as Function of *p*H, Variation of Rotary Power of. F. Vlès and E. Vellinger 1630
Tyndall Phenomenon. A. Carrelli 1858
Vanadium Pentoxide Sol, Quantitative Investigations on. I. Flow Anisotropy. II. The Eddy Cross. H. Freundlich, F. Stapelfeldt and H. Zocher 813

Pressures, High and Low.
Diffusion Velocity, Viscosity and External Pressure, Relation between. E. Cohen and H. R. Bruins 1291
Methyl Chloride, Compressibility and Molecular Weight of. T. Batuecas 2208
Organic Liquids, Compressibilities of. J. Hebeisen 2207
Osmotic Pressure by Solubility Method in Concentrated Solutions. M. P. Applebey and P. G. Davies 2410
,, Pressure of Hæmoglobin. G. S. Adair 2209
,, ,, , Imbibition Pressure and Adsorption, Relation between. M. Polányi 1229
Solutions, Kinetic Theory of Compressibility of, and Binary Liquid Mixtures. K. C. Kar 2206

Radiation (Heat), **Convection and Emissivity.**
Active Hydrogen, Properties of. H. Senftleben 2542
Black Body Radiation, Motion of Free Electrons in, and Interaction between Radiation and Matter. G. Breit 1694
,, (Heat) Radiation, Mechanics of Quantum Relation in Case of. S. Ray 1925
Blankets, Measurement of Heat Insulation and Related Properties of. P. D. Sale and A. F. Hedrick 896
Bose-Einstein Statistics, Demonstrations from. A. Smekal 2547
Convection of Heat, Theoretical and Practical Study of. G. H. Perrin 902
Cooling of Hot Bodies in Gases and Liquids. R. Seeliger 1692
Emission of Heat from Electrically-heated Wires, Investigation of Control Conditions under which Newton's Law is Valid for. Sybil Marshall and J. O. C. Vick 2543
Flames, Non-Luminous, Radiation from. R. T. Haslam, W. G. Lovell and R. D. Hunneman 1927
Freely Cooling Blocks of Iron, Distribution of Temperature in. H. Schmick .. 2719
Gases, Thermic Slip in. M. Czerny and G. Hettner 900
Heating and Cooling of Bodies of Simple Geometrical Form. H. Gröber 1922
Logarithmic Isochromates, Method of. H. Schmidt 169
Matter and Radiation, Equilibrium between. O. Stern 2724
Planck's Law, Light Quanta and Coherence. A. Landé 2546
Quantum-Atoms and Vacuum-Radiation, Thermal Equilibrium between. P. Jordan and Einstein 2640
Radiation and Atomic Heat Theory, Statical Partial Function in. E. Császár 2544
,, and Matter, Equilibrium between. W. Westphal 2545
,, , Heat, Recent Developments in Connection with. A. Shack 4B
,, , Infra-red, and Combustion Rate of Gases. W. T. David 2548
,, , Theory of Equilibrium of. S. Strum 1926
Thermal Radiation from Standpoint of Industrial Application. C. Roszak and M. Véron 620
,, ,, , Distribution of Energy in and Law of Entire Equilibrium. G. N. Lewis 2726
,, ,, , Quantum Theory of. J. K. Syrkin 1695
,, ,, , Thermodynamic Foundations of Theory of. P. Straneo . 1142

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Radiation (Heat), **Convection and Emissivity,** *continued.*
Tungsten and Candle-power of Black Body, Characteristics of. C. Zwikker .. 2668
Unilateral and Periodically Heated Walls, Distribution of Temperature, Passage of Heat and Storage Power in. C. Schwarz 2720

Radio-Activity.
Absorption of Radiation by Atom in State of Emission. M. de Broglie and J. Thibaud 1125
Actinium Active Deposit Ions, Mobility of. H. A. Erikson 1186
Alpha-Ray Luminescence, Theory of Decay of. E. E. Witmer 883
α-Particle and some Nuclear Series, Proposed Model for. R. Hargreaves 2527
,, Counter, Experiments with. E. V. Appleton, K. G. Emeléus and M. A. F. Barnett 145
α-Particles from RaC, Range of. D. Pettersson 1915
,, in Rare Gases, Range of. L. F. Bates 376
,, , Collision of, with Light Atoms. M. Akiyama 141
,, , Optical Projection of Tracks of. H. T. Pye 826
,, , Stopping Power of Gases for. R. W. Gurney 1681
α-Ray Tracks in Strong Magnetic Field. P. L. Kapitza 375
α-Rays from Polonium, Homogeneity of Initial Velocities of. Irène Curie ... 1682
,, of Radium F, Action of Longitudinal Electrical Field on. W. Hammer and H. Pychlau 585
Atmosphere, Ionisation of, *see also* section Static Electricity.
Atomic Disintegration. H. Pettersson and G. Kirsch 586
,, ,, by α-Rays, Phenomena of. G. Kirsch 2305
,, ,, due to α-Particles. Part II. Disintegration Products with Short Range. G. Kirsch and H. Pettersson 1679
,, Nuclei, Studies of. E. Rutherford 1678
Atoms, Stability of. E. Rutherford 1677
Bagnères-de-Luchon, Radio-activity of Certain Cold Springs in Neighbourhood of. A. Lepape 2717
Basalts and Other Rocks, Radio-activity of. J. H. J. Poole and J. Joly..... 373
Becquerel Rays, Coloration and Luminescence produced by. K. Przibram .. 1123
Beta Rays, Scattering of. J. Chadwick and P. H. Mercier 2112
β-Particles in Strong Electric Fields, such as those of Thunderclouds, Acceleration of. C. T. R. Wilson 1683
β-Ray Spectrum of Mesothorium 2. D. H. Black 378
,, ,, of ThB + C. W. Pohlmeyer 377
β-Rays associated with Scattered X-Rays, Measurements of. A. H. Compton and A. W. Simon 1669
,, from RaE, Magnetic Spectrum of. Irène Curie and J. d'Espine 2531
,, of ThB + C, High-velocity, Magnetic Spectrum of. D. K. Yovanovitch and J. d'Espine 1105
,, produced by Homogeneous X-Rays of Short Wave-length. H. Ikeuti 1916
,, , Absorption of, by Matter. G. Fournier 1126, 2111
,, , Helical Method of Focusing. R. A. R. Tricker 341
,, , High-velocity, from Radium B + C, Magnetic Spectrum of. J. d'Espine 2110
,, , Secondary, produced in Gas by X-Rays. P. Auger..... 1124
Bröggerite and Genetic Connection between Thorium and Uranium, Composition of. W. Riss 1129
Cadmium Radiation from Electrodeless Vacuum Tube. M. Hamy 558
Colloidal Particles of Order of 10^{-5} cm, Individual Radio-active, Electrical Behaviour of. F. Ehrenhaft 1913
Contrexéville Springs, Radio-activity of. L. Jaloustre, G. Danne, M. Demenitroux and A. Maubert 2535
Crystal Structure, Experiments on, by Means of Radio-active Substances. K. Horovitz 465
Disintegration of the Elements, Natural and Artificial. E. Rutherford 880
Dissociation and Ionisation by Collision, Statistical Theory of, with Applications to the Capture and Loss of Electrons by α-Particles. R. H. Fowler.. 187
Electrical Counter, Action of. K. G. Emeléus 2342
γ-Ray Spectra by Crystalline Diffraction, Research on. J. Thibaud 1127
γ-Rays in Radio-active Disintegration, Quantity of Heat liberated in Emission of. J. Thibaud 1918
,, of Radium B and Radium C, Heating Effect of. C. D. Ellis and W. A. Wooster 2533

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Radio-Activity, *continued.*
γ-Rays of very Great Energy in Light Elements, Absorption and Scattering of. J. Thibaud 379
,, , Experiments on Absorption and Scattering of. N. Ahmad 2532
γ-Spectra, Characteristic, and their Photoelectric Effect. J. Thibaud 1917
Geiger Counter. T. Wulf 2116
Guérat Granite, Radio-activity of. P. Loisel 374
Guergour Springs, Algeria, Radio-activity of. I. Pouget and D. Chouchak .. 2534
High-Altitude Radiation at Sea-level, Observation of. G. Hoffmann 1130
Ionisation, *see also* section Dissociation and Discharge.
Isotopes, *see also* section Molecular Physics.
Long-range Particles emitted by Active Deposit of Thorium. N. Yamada ... 2114
,, ,, ,, by Polonium. (Miss) Irène Curie and N. Yamada 2113
Mass, Alteration of, when Protons are Closely Packed. W. A. Plotnikow.... 36
Mesothorium 2, Penetrating γ-Radiation of. J. Thibaud 882
,, , Period of. W. P. Widdowson and A. S. Russell 1423
Monatomic and Diatomic Gases, Ionisation by α-Particles in. R. W. Gurney 1714
Nuclear Collisions and Coulomb's Law, Forces acting in. H. Pettersson 2526
Penetration Radiation at High Altitudes. A. Wigand 380
Phosphorescence Excitation by H.F. Radiation. E. Rupp 96
Photoelectric Effect, Compound. P. Auger 2718
Polonium in Oxygen and Nitrogen, Distribution of Range of α-Particles from. Irène Curie and N. Yamada 137
,, , Alpha-Rays from. Fluctuations in Range, Speed of Emission and Ionising Power. Irène Curie 2530
,, , Particles of Long Range from. N. Yamada 1421
Protons from Nitrogen Nuclei, Photographed by Wilson Method, Ejection of. P. M. S. Blackett 1680
RaA, Decay Constant of. M. Blau 1420
Radiations, Radio-active, by Means of Absorption, Method of Analysing. Mme. J. S. Lattès 2109
Radio-active Disintegration Products in Atmosphere, Measurement of, from an Aeroplane. H. Bongards 1128
,, Minerals as Geological Age Indicators. H. V. Ellsworth 1422
Radio-activity. A. F. Kovarik and L. W. McKeehan 1912
,, , Early Days in. E. Rutherford 139
,, , Origin of. E. Briner 2108
Radium C β-Rays, High-Energy Groups in Magnetic Spectrum of. C. D. Ellis 144
,, C, Preparation of. Part II. G. Ortner and H. Pettersson 1672
,, E, Decay of. L. Bastings 587
,, E, Number of β-Particles from. K. G. Emeléus 884
,, Emanation Tubes, Mechanical Device for Sealing Off. H. H. Poole.. 886
,, ,, , Decay Constant of. L. Bastings 1673
,, ,, , ,, of. Constancy of Rate for Different Concentrations. Mme. P. Curie 879
,, Salts due to Formation of Polonium, Increase in Heat produced by. (Mme.) P. Curie and D. K. Yovanovitch 1675
,, Tubes and Applicators, Experimental Methods for Testing Leakage of Emanation from. G. Barlow and H. B. Keene 1419
,, , Decomposition of Total Radiation from, into Groups by Means of Absorption in Platinum. J. S. Lattès 1674
,, , Proportion of, in Uranium Minerals which contain Tantalum, Niobium and Titanium. (Mme.) P. Curie 1131
Radon, Chemical Action produced by. S. C. Lind and D. C. Bardwell 136
,, , Radio-active Constant of. (Miss) Irène Curie and (Miss) C. Chamié.. 878
Recoil Effect of Electrons which Scatter γ-Rays. D. Skobelzyn 143
,, of Radio-active Atoms. M. Akiyama 142
Retrograde H-Particles from Disintegrated Atoms, Proof of Existence of. G. Kirsch 2115
Sea Air, Radium-Emanation Content of. S. J. Mauchly 885
Sklodowskite, A New Radio-active Mineral. A. Schoep 138
Spark Potential and Kathode Fall. H. Stücklen 189
Spring, Thermal, of great Radio-activity in St. Joachimstal, Bohemia. F Béhounek 1676
Stopping-power of Gases for α-Particles, Influence of Magnetic Fields on. R. de L. Kronig 2528

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Radio-Activity, *continued.*
Stopping-power of Hydrogen Atoms for α-Particles. R. H. Fowler 2529
Thorium Family, γ-Radiation of Great Energy of Active Substances of. J. Thibaud 831
,, , Determination of Ratio of Velocities of Two Groups of X-Rays from Active Deposit of. S. Rosenblum 1914
Transformations, Radio-active, Quantum Theory of. Part II. A. Smekal.. 140
Vesuvius, Radio-activity of Gases emitted from. J. Stoklasa and J. Penkava 372

Rays and Radiation (excluding X-Rays).
Bohr's Correspondence Principle, Extension of, to Small Quantum Number. P. W. Ketchum 479
Bose-Einstein Statistics, Demonstrations from. A. Smekal 2547
β-Rays, Helical Method of Focusing. R. A. R. Tricker 341
Bucherer's Experiments on e/m, Interpretation of Results of. T. Lewis 1562
Cadmium Radiation from Electrodeless Vacuum Tube. M. Hamy 558
Canal Rays, Acceleration of. F. Hoffmann 2581
,, ,, , Electromagnetic Analysis of. R. Döpel 1711
Cells with Large Electrical Resistance producing Radiations. E. Bodin 2078
Compton-Effect, Nature of Experimental Contribution to Theory of Radiation. W. Bothe and H. Geiger 2099
,, , Quantum Theory of Intensity of Modified Band in. G. E. M. Jauncey 2100
Crystal Structure, X-Ray Examination of, *see also* section Molecular Physics.
Electromagnetic Law and Quantum Theory. H. A. Senftleben 1699
Electron, Free, in Field of Plane Electromagnetic Wave, Motion of. J. Frenkel 1671
Electrons in Mercury-Vapour, Controlled Orbital Transfers of. R. W. Wood 841
,, , Momentum imparted to, by Radiation. E. O. Hulburt and G. Breit 1325
Ether Radiation in Spatially Closed World, Problem of. K. Lanczos 1574
Gravitation and Radiation, Theory of. W. Gore 296
High-frequency Radiation, Phenomena of. de Broglie 128
Interference and Dynamics of Light Quanta. L. de Broglie 824
Kathode Rays, *see also* section Discharge.
,, ,, , Slow, New Method of Production of. G. Reboul 2573
L-Levels for Radiation of Varying Wave-length, Relative Absorbing Powers of. H. W. B. Skinner 100
Light-Emission under Radiation, Stimulation of Atoms and Molecules to. A. Terenin 1362
Light, Effect of Earth's Rotation on Velocity of. A. A. Michelson, H. G. Gale and F. Pearson 2025
Matter and Radiation. O. Lodge 1328
Mechanical Equivalent of Light, Least. H. E. Ives 1080
Mechanics, Newtonian and Light Quanta. K. Schaposchnikow 776
Nernst Lamp, Total Radiation of Luminous Part of, at Different Temperatures. E. Wiegand 349
Optical Phenomena, Quantum Theory of. J. C. Stater 1834
Output of Light from Luminous Bodies with Coiled-wire Filaments, Effect of Darkening due to Absorption of Radiation on. E. Lax and I. Runge 2499
Oxides, Infra-red Emissive Power of. H. Schmidt-Reps 2670
Ozone as Absorbing Material for Radiation. C. Fabry 1589
Phosphorescence, *see* separate section.
Planck Radiation Law for Atoms with Two Degrees of Freedom, Derivation of. K. F. Niessen 557
Planck's Law, Light Quanta and Coherence. A. Landé 2546
Polarisation Experiment of Wood and Ellett, Theoretical Interpretation of. J. A. Eldridge 83
Polarised Resonance Radiation in Weak Magnetic Fields. R. W. Wood and A. Ellett 99
Positive Rays, Recent Researches in. W. Wien 2580
Quanta and Electric Forces. J. H. Jeans..... 1560
,, , Electromagnetic Theory of. F. R. Bichowsky 2443
,, , Remarks on Theory of. G. Juvet 1559
Quantum Radiation. R. de L. Kronig 350
,, ,, , Theory of. P. Jordan 1081
,, ,, , ,, ,, , Note on P. Jordan's Treatise A Einstein.. 1870

For the **Explanation** of this Index see p. 947

Abstract Nos.

Rays and Radiation (excluding X-rays), *continued.*
Quantum Theory. L. de Broglie 1329
Radiation emitted by badly conducting Substances when Traversed by Electric Current. G. Reboul 1640
,, from Ultra-Microscopic Particles, Diagrams of. R. Gans 1072
,, given out by Gases through which Electric Discharges are Passing. J. J. Thomson 1707
,, Quanta and Ideal Gas Theory. A. Schidlof 1083
,, , Structure of. E. C. Stoner 1871
Radio-Activity, *see* separate section.
Radiometer, Oxalic Acid-Uranyl Sulphate Ultra-violet. W. T. Anderson, Jr., and F. W. Robinson 1634
Resonance Radiation, *see* section Spectra.
Rydberg-Ritz Equation, Constants of. J. H. Jones and J. C. Boyce 481
Selection Principle and Needle Radiation. Erna Weber 2079
Solid Targets, Visible Radiation from. P. D. Foote, W. F. Meggers and R. L. Chenault 351
Spectrum of Radiant Energy, Continuity of. G. Gueben 104
Spheres, Small Dielectric, Radiation Diagrams of. H. Blumer 1850
Statistical Equilibrium between Atoms, Electrons and Radiation, Conditions for. P. A. M. Dirac 411
Time Periodic World and New Treatment of Problem of Ether Radiation. K. Lanczos 1573
Tracing Rays through an Optical System, Rapid Method of. G. Slussareff .. 342
Tungsten Arc, Ultra-violet Radiation from. W. W. Loebe and W. Ledig 2671
Ultra-violet Rays, Absorption of, by Skin and its Therapeutical Applications. J. Saidman 1090
Weber's Formula for Calculation of the Deviation of Luminous Rays, Application of. Fournier 295
X-Rays, *see* separate section.

Reflection of Light.
Absorption, Selective, of Coloured Glasses. Marya Kahanowicz and Ada Estrafalaces 323
Axial Point Objects, Caustics of. W. Merté 2477
Diffuse Reflection, Theory of. G. I. Pokrowski 521
Lustre, Origin of Impression of. H. Zocher and F. Reinicke 2461
Magnesium and Zinc Crystals, Optical Constants of. M. E. Graber 2665
Matt Surfaces, Reflection from. H. Schulz 1613
Matter, Optical Constants of. C. G. Darwin 829
Measurements, *see* separate section.
Metallic Lustre. Part II. W. D. Bancroft and R. P. Allen 2063
,, Reflection, Phase Differences in. J. Richter 2462
,, Surfaces, Reflection from. I. Ebeling 2064
Moving Mirror, Reflection of Light by, according to Classical Electrodynamic Theory and According to Special Theory of Relativity. A. M. Titow .. 2248
Reflecting Power of Metal as a Function of a Wave-Length and Temperature, Method of Determination of. W. J. Beekman and F. W. Oudt 2664
Regular Reflection and Refraction, Quantum Theory of. R. T. Cox and J. C. Hubbard 2663
Röntgen Rays, Reflection of, *see* section X-Rays.
Selenium and Tellurium, Optical Constants of Crystals of, for Wave-lengths from 3000 to 5000 Å. R. F. Miller 2066
Silver, Temperature Variation of Anomalous Reflection of. M. de Sélincourt 1337
Total Reflection of Light. A. Schuster 1051
Ultra-violet Reflecting Power of Metals and Sulphides. W. W. Coblentz and C. W. Hughes 518
Waves, Reflection of, Penetrating normally into a Stratified Medium. J. A. Wilcken 1082

Refraction of Light.
Air between 0° and 100° C., Index of Refraction for Visible Spectrum of. A. Pérard 1053
Aniline and its Aqueous Solutions, Physical Properties of. M. P. Applebey and P. G. Davies 2409
Cæsium, Solid, Optical Constants of. J. B. Nathanson 1052

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Refraction of Light, *continued.*
Calcite, Index of Refraction of, for X-Rays. C. C. Hatley 582
Celluloid Anomalies of Accidental Double-refraction, with Remark on Work of A. Ramspeck. P. Heymans 2666
Classical Dispersion Formula for Monatomic Gases and Vapours, Correction to Paper on. K. F. Herzfeld and K. L. Wolf 1854
,, Dispersion Formula for Monatomic Gases and Vapours, Test of. K. F. Herzfeld and K. L. Wolf 1070
Crystals, Mixed, Optical Properties of. Mary W. Porter 2466
Diffusion of Light and Ratio of Absolute Delay in Phenomenon of Kerr. Y. Rocard 2469
Double Refraction, Electrical, in Gases. N. Lyon 74
Electrostriction in Liquids which are only Slightly Birefracting. M. Pauthenier 920
Gases, Refraction in, *see also* separate section.
Index of Refraction of Liquid, New Methods for Determining. A. Sellerio ... 814
Indices of Refraction of Elements and Compounds, and Relation between Critical Potentials. B. Davis 2667
Iodo-Succinimide, Crystallographic and Optical Properties of. A. E. H. Tutton 2228
Kinematics. C. L. R. E. Menges 1614
Law of Refraction, Limit of Application of. P. Fröhlich 522
Lenses, Objectives, and Prisms, *see* section Lenses.
Lithium, Chemistry of. Relation between Contraction, Refraction and Absorption of Light in Aqueous Salt Solutions. G. F. Hüttig and M. Keller .. 2464
Magnesium and Zinc Crystals, Optical Constants of. M. E. Graber 2665
Matter, Optical Constants of. C. G. Darwin 829
Measurements, *see* separate Section.
Molecular Dispersion of Light in Liquids. R. Gans 825
Neutralisation, Refractometric Studies of F. S. Hammett 1519
Pearls, Interior of, New Method of Examining. B. Szilard 1334
Refraction and Dispersion in Light-Quantum Theory. L. S. Ornstein and H. C. Burger 1068
Refractive Index and Pressure for Certain Organic Liquids, Relationship between. I. Eisele 1335
,, Index, Influence of Atomic Arrangement on. W. L. Bragg 320
Regular Reflection and Refraction, Quantum Theory of. R. T. Cox and J. C. Hubbard 2663
Röntgen Rays, Refraction of, *see* section X-Rays.
Selenium and Tellurium for Wave-lengths from 3000 to 5000 Å., Optical Constants of Crystals of. R. F. Miller 2066
Spheres, Small Dielectric, Radiation Diagrams of. H. Blumer 1850
Spherical Wave in Spherical Interface, Refraction of. I. Roman 1336
Stress Optical Coefficients of Glass for Direct Tension and Pressure. S. R. Savur 2262
Tetrahedral Molecule, Calculation of Rotatory Power of. R. de Mallemann.. 2471
Transparence, Anisotropic, and Diffusion in Oriented Liquid Crystals. A. Perrier 321
Vanadium Pentoxide Sol, Quantitative Investigations on. I. Flow Anisotropy. II. The Eddy Cross. H. Freundlich, F. Stapelfeldt and H. Zocher 813

Relativity.
Aberration. R. Tomaschek 2024
Bucherer's Experiment, New Discussion of. U. Doi. 1563
,, ,, ,, ,, . G A. Schott 2231
,, Experiments on e/m, Interpretation of Results of. T. Lewis 1562
Einsteinian Fields, Axially Symmetrical, Theory of. P. Straneo 1330
Einstein's Law of Gravitation, Elementary Deduction of. T. Shimizu 2235
Equivalence, Principle of, on Theory of Relativity. T. Y. Thomas..... 795
Ether Drift. F. Zerner 2240
,, Radiation in Spatially Closed World, Problem of. K. Lanczos 1574
Gravitational Electromagnetic Field, Riemannien Projective Nature of. H. Eyraud 1010
,, Field of Moving Mass Point and Dynamical Problem of Two Bodies on Einstein Theory. J. Kudar 1832
Huyghens' Optics and Theory of Relativity. W. Rivier 797

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Relativity, *continued.*
Light, Effect of Earth's Rotation on Velocity of. A. A. Michelson, H. G. Gale and F. Pearson 2025
Mass and Energy and Stellar Evolution, Relativity Relation between. E. Condon 1601
Mechanics and Einstein Invariance Principle. A. H. Bucherer 2234
Michelson Experiment and Relativity. A. Metz and E. Brylinski 483
Moving Mirror, Reflection of Light by, according to Classical Electrodynamic Theory and according to Special Theory of Relativity. A. M. Titow .. 2248
Optical Records and Relativity. C. L. Morgan 324
Past and Future, Discriminations between. P. du Val 1568
Planetary Time and Einstein's Theory. H. Reichenbach 2439
Relativity. G. Fournier and F. Prunier 1565
,, . F. Prunier 1564, 2230
,, . F. Severi 39
,, and Significance of Michelson-Morley Experiment, Relation of Restricted to General Theory of. W. F. G. Swann 2641
,, in Classical Mechanics, Possibility of fulfilling Requirements of Theory of. E. Schrödinger 2424
,, referred to Flat-Space-Time. C. K. V. Row 1566
,, Theory, Ambiguity in. G. v. Gleich 41
,, ,, , Special, Objection to. H. Thirring 485
,, , Formula of Theory of. C. Henry 796
,, , Limiting Form of Fundamental Hydrodynamical Equations of Theory of, on Assumption of Infinitely Large Value of Velocity of Light. G. Grünberg 1830
,, , Lines of Force in Special Theory of. G. Jäger 1009
,, , Principle of. W. F. G. Swann 2229
,, , ,, of Action applied to General Theory of. K. Lanczos 1831
Space and Time in Relativist Geometry. G. Giorgi 2440
Spherical Mass Systems, Relativity Theory of. Lémeray 1567
Time and its Measurement. K. Vogtherr 794
,, Periodic World and New Treatment of Problem of Ether Radiation. K. Lanczos 1573

Solution and Solubility.

Agar, Sols and Gels of, Differences between. E. Hatschek and R. H. Humphry 221
Benzoic Acid in Benzene and Toluene, Solubility of. J. Chipman 432
Bi-valent Salts, Solubility of, in Solutions containing a Common Ion. O. J. Walker 1233
Brass, Corrosion of, as affected by Grain Size. R. J. Anderson and G. M. Enos 979
,, , Further Study of Dezincification of. C. F. Nixon 955
Brownian Movements, *see* section Molecular Physics.
Carbonic Acid in Dilute Solutions of Calcium Hydrogen Carbonate or in Hard Tap-Waters. E. M. Crowther and W. S. Martin 455
Celluloses during Swelling in Aqueous Solutions, Changes in Röntgenograms of. J. R. Katz and H. Mark 2172
Celtium. J. Bardet and C. Toussaint 2616
Chlorides, Conductivity of, in Fused Antimony Chloride, and Ghosh's Theory. Z. Klemensiewicz 435
Colloid Chemistry. E. K. Rideal 691
Colloidal Chemistry, Development of. W. D. Bancroft 2174
,, Gold Sols, Reduction Velocity and Growth of Small Gold Particles in Preparation of. R. Zsigmondy and E. Hückel 2383
,, Metallic Suspensions, Colour Theory of. G. Jobst 2062
,, Solution, Quantitative Study of Protection attained in, by Introduction of Electrolyte in Quantity insufficient to produce Coagulation. A. Boutaric and G. Perreau 1761
,, Solutions, Stability of. K. C. Sen 693, 1986
,, Suspensions, Law of Distribution of Particles in. J. R. H. Coutts .. 2773
Colloids,, Influence of Dilution on. W. Kopaczewski 219
,, , Swelling of, in Presence of Capillary-active Substances. F. V. v. Hahn 692
Condensed Ternary System : Phenol-Water-Salicylic Acid. C. R. Bailey 2789
Conductivity Determinations of Very Dilute Solutions. H. Remy 1502
,, , *see* separate sections.

For the **Explanation** of this Index see p. 947.

Solution and Solubility, *continued.* Abstract Nos.
Constant N of Avogadro. P. L. du Noüy 2614
,, ,, , New Determination of. L. M. Alexander 1752
,, ,, , ,, ,, , based on its Definition. P. L. du Noüy 431
Corrosion. W. M. Corse, W. D. Bancroft, F. N. Speller, W. H. Bassett, H. A. Bedworth, W. G. Whitman, R. P. Russell, R. E. Wilson, W. H. Bahlke, A. C. Zimmerman, U. R. Evans, N. B. Pilling, R. E. Bedworth, W. E. Pratt, J. A. Parsons, J. W. Shipley, I. R. McHaffie, N. D. Clare, W. R. Whitney, G. W. Morey 1984
,, by Electrolyte Concentration Cells. R. J. McKay 1231
,, of Iron and Steel, Critical *résumé* of Information on. D. V. Onslow.. 218
,, Research Committee of the Institute of Metals, Seventh Report to. G. D Bengough and R. May 690
,, Resistance of Steel Electroplated with Zinc and Zinc-Mercury Alloys. C. J. Wernlund 952
,, Testing by Different Immersion Methods. H. S. Rawdon and A. I. Krynitsky 2778
,, , Electrolytic Theory of. F. N. Speller and F. G. Harmon 2774
,, , Localised, Surface Abrasion as Potential Cause of. U. R. Evans... 2167
,, , Micro-Chemistry of. C. H. Desch 2777
Crystallisation of Substances from Solution, Effect of Various Factors upon Velocity of. J. D. Jenkins 1985
Cupferron, Salts of. (Miss) V. Auger, L. Lafontaine and C Caspar 1521
Decomposition Potentials of Solutions of Metal Bromides in Molten Aluminium Bromide. W. Isbekow 2379
Diffusion in Solution, Stokes-Einstein Law for. C. C. Miller 950
,, Potentials, Estimation of. P. F. Büchi 224
Dispersoid (Colloid) State, Theory of. P P. v. Weimarn 2176
Dissolution of Substances in Mixed Liquids, with Special Reference to Colloids. E. W. J. Mardles 694
Electrical Layer Farthest Away from Surface of Solution in Contact with Air or Metal, Sign of. R. D. Kleeman and C. R. Pitts 1987
Emulsions, New Method for Determination of Distribution of Size of Particles in. E. O. Kraemer and A. J. Stamm 1238
,, , Studies in. W. Seifriz 2381
,, , Use of Scattered Light in Determination of Distribution Size of Particles in. A. J. Stamm and T. Svedberg..... 2170
Emulsoid Sols, Determination of Size of Invisible Particles in. H. R. Kruyt and H. J. C. Tendeloo 433
Emulsoids, Influence of, upon Rate of Dissolution of Zinc in Solutions of Lead, Nickel and Copper Salts. J. N. Friend and J. S. Tidmus 2377
Ferrous Hydroxide, Solubility of, and its Effect upon Corrosion. W. G. Whitman, R. P. Russell and G. H. B. Davis 1232
,, Metals, Electrolytic Corrosion of. W. M. Thornton and J. A. Harle .. 2779
Film Protection as Factor in Corrosion. F. N. Speller 2776
Gelatine, Surface Concentration of, at Liquid-Gas Interface as indicated by Change in Surface Tension. J. M. Johlin 1759
Gels, Dilute Gelatine, Periodic Precipitation in. G. W. S. Blair 1240
,, , Velocity of Hydrogen Ions in. N. Isgarischew and A. Pomeranzewa ... 1503
,, , ,, ,, ,, . R. E. Liesegang 223
Gold Sols, Protection and Precipitation of, by Albumen. R. Zsigmondy and E. Joël 695
Heats of Solution of Enantiotropic Modifications at Transition Point. E. Cohen and H. L. Bredée 2619
,, of Solutions of Alkali Halides, Diluted and Saturated, Determination of. J. Wüst and F. Lange 599
Hydrogen and Palladium, Relationship existing between. B. Lambert and S. F. Gates 2373
Hydrolysis, Electrometric Study of. P. Job 968
Ice Crystallisation, Velocity of, through supercooled Gelatine Gels. E. H. Callow 2382
Ideal Solubility Curve, Application of, to Equilibrium Diagrams in Metal Systems. D. H. Andrews and J. Johnston 697
Interaction Phenomenon between Solutions and Molecular Significance of Negative Surface-tension, Explanation of so-called. N. K. Adam and G. Jessop 2384

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Solution and Solubility, *continued.*

Ionised Solutes, Inter-ionic Attraction Theory of. III. Testing of Theory in Alcoholic Solvents. A. A. Noyes and W. P. Baxter 2771
,, ,, ,, ,, . IV. Influence of Variation of Dielectric Constant on Limiting Law for Small Concentrations. P. Debye and L. Pauling 2772
Ions, Colloids and Gels, Hydration of. N. R. Dhar 2621
Iron Alloys, Corrosion of, by Copper Sulphate Solution. C. M. Kurtz and R. J. Zaumeyer 2780
,, , Influence of Emulsoids upon Rate of Solution of. J. N. Friend, D. W. Hammond, G. W. Trobridge 2775
Isoelectrical Points. R. Kuhn 984
Isomeric Organic Compounds, Solubility Relations of. I. Introduction. J. Johnston 2169
Kathodic Supertension of Hydrogen and Metals, Influence of Colloids upon. C. Marie and G. Lejeune 220
Linear Elements, Ultra-microscopic Investigation of. A. Szegvari 79
Mixed Solvents, Molecular Weight Determination in. C. Drucker 2618
Molecular Weight and Solution. W. D. Bancroft 2770
Negative Colloidal Sol, Influence of Anions in Coagulation of. D. C. Henry and V. A. Morris 222
Number N and Certain Molecular Dimensions, New Method of Determining, based on Study of Surface Equilibrium of Colloidal Solutions. P. L. du Noüy 2769
Osmotic Pressure, Imbibition Pressure and Adsorption, Relation between. M. Polányi 1229
Partial Pressures of Liquid Mixtures at Boiling-point, Effect of Non-volatile Solute on. B. H. Carroll, G. K. Rollefson and J. H. Mathews 2314
Piezo-Chemical Studies. XXVI. Influence of Pressure on Solubility. E. Cohen, W. A. T. de Meester and A. L. T. Moesveld 949
Portland Cement in Weathering Agents, Solubility of. H. K. Benson, J. S. Herrick and T. Matsumoto 699
Raoult's Law and Partial Heats of Solution, Relation between Deviations from.. J. A. V. Butler 1235
Rotatory Power, Influence of Solvents on. R. Lucas 2264
Salts, Solubility, Heat of Solution and Lattice Energy of. J. A. V. Butler.... 698
Sediments and Solutions of Electrolytes in Contact with them, Electrokinetic Relations between. R. Labes 2194
Soap Films, Composition of. Mary E. Laing 2620
,, Solutions, Constitution of, in Presence of Electrolytes, Potassium Laurate and Potassium Chloride. W. C. Quick 2378
Soaps and Theory of Colloids. J. W. McBain 2175
Sodium Carbonate-Sodium Sulphate-Water, System. W. A. Caspari 434
Solid Diffusion, Experiment in. F. C. Thompson and W. H. Dearden 226
,, Solutions between Compounds of Elements of Differing Valency. G. Bruni and G. R. Levi 1504
,, Solutions of Potassium Chloride and Potassium Bromide, X-Ray Analysis of. T. Sasahara 2173
Solubility in Mixtures of Liquids. G. Pleuger 1501
,, of Substances, Influence of Pressure on. Part V. System Naphthalene-Tetrachlorethene. E. Cohen, W. A. T. de Meester and A. L. T. Moesveld 2376
,, , Constant, Existence of, and Displacement of Maximum of Solubility. A. Colson 947
,, , Maximum, Conditions of: Example of Gypsum. A. Colson 946
Solution, Heats of, and Dilution of Salts, Extreme Dilution to Saturation. J. Wüst and E. Lange 2319
,, , Heats of, and Heats of Incomplete Reaction. Miss Bérenger and A. Tian 2320
Solutions, Kinetic Theory of Compressibility of, and of Binary Liquid Mixtures. K. C. Kar 2206
Solvation, Electrode Potentials and Free Energy of. J. Heyrovský 1994
Sugar, Hydrolysis Constant of. H. Colin and (Miss) A. Chaudun 969
Sulphur Dioxide in Water, Solubility of, and in Aqueous Solutions of Potassium Chloride and Sodium Sulphate. J. C. Hudson 2168
Surface Films on Water, Structure of. N. K. Adam 1236

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Solution and Solubility, *continued.*
Surface Solutions and Gay-Lussac's Law. A. Marcelin 2374
,, ,, , Extension of Gay-Lussac's Law to. R. Delaplace 2375
Suspensions, Effect of Light on Settling of. C. G. T. Morison 2380
,, , Stability of. I. Rate of Sedimentation of Kaolin Suspensions by Salts at Varying Hydrogen-ion Concentrations. W. O. Kermack and W. T. H. Williamson 1760
Swelling in some Substances which give a Debye-Scherrer Diagram, X-Ray Spectrographic Researches on Existence of. J. R. Katz and H. Mark 129
,, in some Substances which give a Debye-Scherrer Diagram, Röntgen-Spectrographic Researches on Nature of. J. R. Katz and H. Mark ... 696
,, of Substances giving a Fibre-Diagram, Röntgen-Spectrographical Researches on Nature of. J. R. Katz 951
,, Phenomena, Significance of Röntgen Spectrography in. J. R. Katz.. 1239
Ternary Mixtures, Critical Solution Temperature of. A. Boutaric and G. Corbet 948
Ultra-Centrifuge, New Instrument for Determination of Size and Distribution of Size of Particles in Amicroscopic Colloids. T. Svedberg and H. Rinde 1237
Vanadium Pentoxide Sol, Quantitative Investigations on. I. Flow Anisotropy. II. The Eddy Cross. H. Freundlich, F. Stapelfeldt and H. Zocher 813
Viscosity, *see also* separate section.
Yttrium Salts, Solubility of. M. C. Crew, H. E. Steinert and B. S. Hopkins .. 1234

Sound.
Acoustic Filters in Series. G. W. Stewart 630
,, Wave Filters : Extension of the Theory. G. W. Stewart 911
Aeolian Tones, Observations of. E. G. Richardson 1928
Air Column, Cylindrical, Vibrations of. C. Barus 2328
Audition, Binaural. E. Meyer 1929
Compound Resonators, Resonance Frequencies of. E. T. Paris 172
Conical Horn, Non-radial Harmonic Vibrations within. V. A. Hoersch 1442
,, ,, , Theory of Optimum Angle in. V. A. Hoersch 1443
Cylindrical Pipe with Lateral Hole. E. Ratz 2330
Damping of Steel Wire, Application of Thermionic Valve to Measurement of. Florence M. Chambers 397
Ear, Sensitiveness of, for Compound Tones. H. Barkhausen and G. Lewicki.. 622
Explosion at La Courtine. P. Villard 398
,, , Spark Photography as Means of Measuring Rate of. J. E. Smith.. 2131
,, , Wave-length of Maximum Energy in Sound Spectrum of. A. Dufour 905
Explosive Waves at Great Distances, Audibility of. M. Collignon 908
Free Reed, Maintenance of Vibrations of. Z. Carrière 625
Helmholtz Resonator with Hyperboloidal Mouth, Frequency of. A. T. Jones 1934
,, ,, , Additions to Theory of. A. T. Jones 1933
Hydrogen, Acoustical Test for. E. Hurwitz 1935
Israj, an Indian Stringed Instrument. D. B. Deodhar 171
La Courtine, Propagation of Aerial Waves and Observations of. C. Maurain 907
Loudness of a Complex Sound. H. Fletcher and J. C. Steinberg 175
Membrane, Stretched, with Particular Law of Density, Vibrations of. E. L. Ince 1800
Membranes, Unsymmetrical, Vibrations of. W. L. Lewschin 2731
Microphone, Theory of. R. Kelch 1036B
Oppau and La Courtine Explosions. Rothé, Lacoste, Bois, (Miss) Dammann and (Miss) Hée 906
Organ Pipes of Unusual Shapes. W. E. Benton..... 627, 628
,, ,, ,, ,, , Vibrations in. J. A. Aldis 170
Partition Walls, Theory and Interpretation of Experiments on Transmission of Sound through. E. Buckingham 2732
Phonodeik, Design and Calibration of. S. H. Anderson 2733
Pianoforte Hammer, Elastic Impact of. S. Bhargava and R. N. Ghosh 997
,, String Struck by Elastic Hammer, Partials of. R. N. Ghosh 626
Pipes, Secondary Waves in Air in. T. Vautier 2554
Radiation Pressure, Dynamical Illustration of. E. L. Nicolai 995
Reverberation Equations for Two Adjacent Rooms connected by Incompletely Sound-proof Partition. A. H. Davis 2329
" Ribbon " Microphone. Henrard 1037B
Semi-Deaf and Wireless Telephony, Function of Ear and Deafness. F. Marre 922B

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Sound, *continued.*
Sensitive Flames, Types of. L. H. Jordan and R. K. McKlung 909
Short-Sound Waves, Powerful Source of. M. Holtzmann 1155
Sound Waves in Earth. Barré and Schnell 2327
,, ,, ,, Turbid Media, Absorption of. W. Altberg and M. Holtzmann 1156
Speech Reception, Interfering Effect of Tones and Noise upon. V. O. Knudsen 2553
Speed of Sound and Ratio of Specific Heats for Organic Liquids. W. Busse.. 623
,, ,, ,, in Sea-Water, Accurate Determination of. E. A. Eckhardt.. 624
Stationary Sound Waves, Relative Temperature Measurements in. J. Friese and E. Waetzmann 174
Stethoscope, Electrical. H. A. Frederick and H. F. Dodge 629
Stretched Strings, Large Forced Vibrations of. R. N. Ghosh 2129
String under Intermittent Impulses, Vibration of. D. Gunnayya and G. Subrahmaniam 1158
Struck String, Electrical Method for Impact on. W. H. George 2130
,, ,, , Partial Tones of. I. Experimental Investigation of the Fundamental. W. H. George 2552
Sub-Harmonics, Production of. W. N. Bond 1441
Submarine Sounds, Sensibility of Circular Diaphragms for Reception of. J. H. Powell 1930
Systems with disturbed Superposition, Self-exciting Phenomena in. K. Heegner 173
Tapered Rods, Natural Notes of. W. Hort 1936
Thermo-Microphone, Investigation of. A. v. Hippel 1932
,, , Theory of. A. v. Hippel..... 1931
,, , ,, . A. v. Hippel, J. Friese and E. Waetzmann.. 910
Transmission and Reception of Sound Waves. W. M. Hahnemann 1049B
Underblown Pipes. D. Gunnayya and G. Subrahmaniam 1157
Velocity of Sound in Liquids and its Relation to Heats of Vaporisation. V. Ionescu 1153
Vibrating String, Forces at Ends of. W. H. George 1299
Vibrations, *see also* section Elasticity.
Vowel Sounds, Electrical Method of Producing, and its Application to Wireless Telegraphy. W. H. Eccles and C. F. A. Wagstaffe 1154
Zones of Silence. E. Esclangon 2326

Specific Heat and Latent Heat.
Atomic Heat Capacities of Iron and Nickel at Low Temperatures. W. H. Rodebush and J. C. Michalek 2721
Chlorine Dioxide, Absorption Spectrum and Specific Heat of. H. Mayer 567
Combustion Bomb, Small, and Micro-Calorimeter. W. A. Roth, H. Ginsberg and R. Lassé 153
Critical Pressure-Ratio for Gases as affected by Variable Specific Heat. W. J. Walker 160
Ethyl Ether, Liquid, at 0° and 12°, Specific Heat and Heat of Vaporisation of. F. G. Keyes and J. A. Beattie 154
Evaporation, Kinetic Theory of. D. B. Macleod 2120
Explosion Observations on Communication of E. Burlot. H. le Chatelier ... 889
Explosives, Determination of Theoretical Force and Co-Volume of. E. Burlot 888
Flow Calorimeter for Specific Heats of Gases. N. S. Osborne, H. F. Stimson and T. S. Sligh, Jr. 2538
Fusion, Latent Heats of. Part II. Palmitic Acid and Benzene. (Mrs.) K. Stratton and J. R. Partington 892
Heats of Solution at Enantiotropic Modifications at Transition Point. E. Cohen and H. L. Bredée 2619
Latent Heat Determination. A. W. Smith 2119
Liquids, Specific Heat of. R. N. Ghosh 1427
Metals, Specific Heats of. W. U. Behrens and C. Drucker 595
,, , ,, ,, , at High Temperatures. K. K. Smith and L. I. Bockstahler 596
Molecular Interaction in Liquid State, Theory of. G. N. Antonoff 2126
Salt Solutions, True Specific Heats of: Cadmium Iodide, Ammonium Nitrate, and Zinc Sulphate. E. Cohen, W. D. Helderman and A. L. T. Moesveld 597
Specific Heat at absolute Zero and Thermodynamical Invariants. W. Jazyna 151
,, ,, of Bromine at Low Temperatures and its Chemical Constant. R. Suhrmann and K. v. Lüde 382

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Specific Heat and Latent Heat, *continued.*
Specific Heat of Superheated Ammonia Vapour. N. S. Osborne, H. F. Stimson, T. S. Sligh, Jr., and C. S. Cragoe 1688
,, Heats of Air and of Hydrogen at Atmospheric Pressure and at Temperatures between 20° C. and — 183° C., Ratios of. J. H. Brinkworth 1686
,, ,, of Aqueous Solutions, including Results for Various Salts and Organic Acids, Improved Differential Method for Exact Determination of. T. W. Richards and F. T. Gucker, Jr. 2312
,, ,, of Carbon Monoxide and Hydrocyanic Acid Vapour. J. R. Partington and M. F. Carroll 1687
,, ,, , Corrections regarding Subject of. S. Wiesner 2118
,, ,, , Study of. S. Wiesner 1143
Speed of Sound and Ratio of Specific Heats for Organic Liquids. W. Busse .. 623
Superheated Steam at High Pressures, Total Heat of. New Method of Measurement, including Latent Heat. H. L. Callendar 2540
,, Vapours, Specific Heat of. R. Plank 149
Tungsten, Incandescent, Specific Heat of, by Improved Method. L. I. Bockstahler 1921

Spectra (*see also* Molecular Physics).
Absorption and Emission Spectra in Mercury-Vapour. L. A. Turner and K. T. Compton 2088
,, in Excited Neon. K. W. Meissner 1188
,, ,, ,, . Remarks on Work of K. W. Meissner. P. Jordan 1710
,, Lines proceeding from one State, Total Strength of. W. Kuhn .. 2289
,, Spectra and Coordination of Cupric Compounds. H. S. French and T. M. Lowry 360
,, Spectra of Copper, Silver and Gold Vapours in the Ultra-violet. R. V. Zumstein 1378
,, ,, of Mixed Metallic Vapours. II. Spectra of Volatile Compounds of Magnesium and Alkali Metals. S. Barratt 2511
,, ,, of Vapours of Lead and Tin. N. K. Sur and R. K. Sharma .. 126
,, Spectrum of Water-Vapour, Series in. H. Witt 112
,, ,, of the Neutral and Ionised Cadmium Atom in Water-immersed Spark Discharge. H. Stücklen 359
Alcohols, Infra-red Absorption Spectra of. J. Lecomte 1647
Alkali Metals, Extreme Ultra-violet Spectra of. W. W. Shaver 866
Alkaline Earths, New Regularities in Spectra of. H. N. Russell and F. A. Saunders 1382
Aluminium Hydride, Band-Spectrum of. W. Mœrikofer 870
,, Sub-Group, Spectra of Metals of. K. R. Rao 2096
,, , Theory of Spark-Spectrum of. F. J. v. Wiśniewski 570
Ammonia Gas at 3μ, Spectrum of. B. J. Spence 1384
Arc and Spark Spectra, Displacement Law for. W. F. Meggers, C. C. Kiess and F. M. Walters, Jr. 849
,, Spectra and Stark-Effect, Broadening of Lines in. H. Lowery 1878
,, ,, of Silver and Copper. A. G. Shenstone 1893
,, ,, , Apparent Tripling of Certain Lines in. T. Royds 1653
,, Spectrum of Lanthanum between λ3100 I.Å. and λ2200 I.Å. S. P. de Rubies 2091
Argon Spectrum, Intensities in. P. Lowe and D. C. Rose 864
,, , Determination of Critical Potential of L3 Line of. F. Holweck 1109
,, , Krypton and Xenon, Higher Order Spark-Spectra of. L. and E. Bloch and G. Déjardin 853
Aromatic Compounds, Emission Band-Spectra of. Part I. Their Connection with Infra-red Absorption Bands and Classification. Part II. Their Origin. J. K. Marsh 1899, 1900
Atmospheric Oxygen in Extreme Ultra-violet, Absorption Spectrum of. E. Schmidt 1890
Atomic Nitrogen and its Arc Spectrum, Production of. K. T. Compton 2506
Aurora, Vegard's Theory of. R. d'E. Atkinson 362
Auroral Spectrum, Problems of. J. C. McLennan and G. M. Shrum 2287
Balmer Lines in an Oscillating Discharge, Width of. (Miss) M. Hanot 1087
,, Series Lines of Hydrogen, Relative Probabilities of Transitions involved in. F. C. Hoyt 1391

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Spectra (*see also* Molecular Physics), *continued.*
Band Lines, Intensities of. H. Hönl and F. London 2690
,, -Spectra. R. Mecke 1369
,, and Molecular Structure. Y. Takahashi 107
,, of Carbon, Influence of Pressure on Consequences for Theory of Comets. F. Baldet 1708
,, of Crystals and Complex Gases. H. Kahler 2086
,, of Sodium, Potassium, and Sodium-Potassium Vapours, Fine Structure of. H. G. Smith 361
,, , Energy Levels in. O. S. Duffendack 2084
,, , Intensities in. G. H. Dieke 2276
,, , Isotope-Effect in. R. S. Mulliken 1367, 1649
,, , Line-Intensities in, and Correspondence Principle. R. H. Fowler 1877
,, , ,, -Spectra Relationships in. R. Mecke 109
,, , Regularities in. S. Datta 108
,, , Structure and Distribution of. H. Deslandres 2085
,, , ,, of. H. Deslandres 2274
,, , ,, of. R. Mecke 2275
,, , ,, of. R. Mecke 1646
Bands in Secondary Spectrum of Hydrogen. G. H. Dieke 560
Benzol Vapour under Monochromatic Excitation, Fluorescence of. P. Pringsheim and A. L. Reimann 97
Bohr's Correspondence Principle, Problem of Quantitative Formulation of. R. C. Tolman 1392
Borax and Phosphate Beads, Influence of Temperature on Absorption Spectra of. Marguerite Funck 860
Boron (B_{II}) and Carbon (C_{III}), Series Spectra of Two-Valence-Electron Atoms of. I. S. Bowen and R. A. Millikan 2697
Broadening Spectra, Apparatus for. W. J. S. Lockyer 820
Cadmium, Excitation of Spectra of. A. E. Ruark and R. L. Chenault 2296
Cæsium, Low-Voltage Excitation of Spectrum of. A. L. Hughes and C. F. Hagenow 118
Calcium (Ca II) Ionised, Spectrum of. F. A. Saunders and H. N. Russell ... 2510
,, Hydride Molecule, Highly Unstable, Band of Unusual Structure probably due to. R. S. Mulliken 1888
Carbon in Electric Field, Behaviour of Spark Lines of. S. Nakamura and Y. Fujioka 2292
,, Monoxide and Water-Gas, Flame Spectra of. Part I. F. R. Weston 2507
,, ,, at Very Low Pressure, Spectrum of. F. Baldet 1111
,, , Further Spectra associated with. R. C. Johnson 2298
Celestial Spectra, Continuous Hydrogen Radiation in. J. W. Nicholson 1387
Chemical Elements, Mass-Spectra of. Part VI. Accelerated Anode Rays. F. W. Aston 1883
Chemically Homologous Series, Optical Properties of. A. Krethlow 2470
Chemiluminescence and Heteropolar Combination. A. Petrikaln 2076
Chlorine Dioxide, Absorption Spectrum and Specific Heat of. H. Mayer 567
CN Molecule, Electronic States of. R. S. Mulliken 840
Cobalt Spectrum, Structure of. M. A. Catalán and K. Bechert 2092
,, , Regularities in Arc Spectrum of. F. M. Walters, Jr. 568
Columbium, Regularities in Arc Spectrum of. W. F. Meggers 852
" Comet-Tail " Spectrum and Deslandres' First Negative Group. H. B. Lemon 1407
Comet's Tails, Spectrum of. F. Baldet 1608
Constricted Arc of Metals, Spectra of. T. Takamine and M. Fukuda 125
Continuous Spectra of Halogens. W. Steubing 1897
Correspondence Principle, Application of, to Degenerate Systems and Relative Intensities of Band Lines. E. C. Kemble 1368
Coulomb's Law and Hydrogen Spectrum. E. B. Wilson 634
Crystal Structure and Absorption Spectra. R. Hill and O. R. Howell 24
CuH Molecule and its Band Spectrum. H. Bell 1098
" Dashed " and Displaced Terms in Spectra. O. Laporte and G. Wentzel, A. Landé 1363
Doppler Effect during Transformation of Resonance Fluorescence at Reflection. W. Rump 348
,, Principle and Bohr's Frequency Condition. P. A. M. Dirac 106
Doublet Spectra, Term Problems in. G. Wentzel 2102
Doublets and Triplets in Spectra of Different Elements. Y. Sugiura 2280

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Spectra (*see also* Molecular Physics), *continued.*
Effective Temperatures of Stars, Spectrophotometric Measurements of. R. A. Sampson 1604
Einstein Shift of Spectral Lines, *see also* section Astronomy.
Electrically-exploded Wires, Study of. S. Smith 2087
Electron-Groups in the Atom, Relation between Closing in of, and Structure of Complexes in Spectrum. W. Pauli, Jr. 1875
Electrons in Mercury-Vapour, Controlled Orbital Transfers of. R. W. Wood 841
Enhanced Lines of Various Elements. M. Kimura 2278
,, ,, ,, ,, M. Kimura and G. Nakamura 2277
First Negative Deslandres' Group of Carbon, Application of Quantum Theory of Band-Spectra to. C. M. Blackburn 1406
Flame Spectra and Spectral Lines, Intensities in. F. Dannmeyer 1881
,, ,, , Intensity Measurements in. C. E. Bleeker and I. A. Bongers 122
Fluorite, Kathode-luminescence of. F. G. Wick 105
Forbidden Spectral Lines, Excitation of. P. D. Foote, T. Takamine and R. L. Chenault 2696
Fulcher Hydrogen Bands. W. E. Curtis 1657
,, ,, ,, , Remarks on. G. H. Dieke 2286
Germanium and Chlorine, Temperature Displacements in Spectra of. J. Lunt 856
,, , Extreme Ultra-violet Spectrum of, and of Scandium. H. J. C. Ireton 857
,, , Spectrum of. J. Lunt 855
Glow Discharge, Spectrophotometry of. R. Seeliger and W. Lindow 2293
Gold, Series Spectrum of. J. C. McLennan and A. B. McLay 2299
Grignard Compounds, Chemi-luminescent Spectra of. R. T. Dufford, Dorothy Nightingale and S. Calvert 845
He 5876 Å., Fine Structure of. Rita Brunetti 1380
Helium, Structure of Band-Spectrum of. Part III. Doublet Bands. W. E. Curtis and R. G. Long 2288
Hydrogen at Different Temperatures and Pressures, Measurements of Intensity of Lines of Many-lined Spectrum of. F. Goos 1379
,, at Higher Pressures, Secondary Spectrum of. I. Sandeman..... 2705
,, at very Low Temperatures, Secondary Spectrum of. J. C. McLennan and G. M. Shrum 871
,, Atom with Nucleus in Motion, Circular Orbits in. E. Reichenbächer 2021
,, Spectral Lines, Fine Structure of. P. H. van Cittert..... 2703
,, Spectrum. E. Gehrcke and E. Lau 1884
,, ,, , Continuous. A. Carst 561
,, , A, P, Q and R Combination in Many-lined Spectrum of. O. W. Richardson and T. Tanaka 848
,, , Balmer Series of. L. Janicki 1885
,, , Excitation of Secondary Spectrum of, by Electron Impacts. O. S. Duffendack 120
,, , Heat of Rotation of. E. Schrödinger 1370
,, , Intensities in many-lined Spectrum of. G. H. Dieke 1656
,, , Regularities in Secondary Spectrum of. O. W. Richardson and T. Tanaka 1887
,, , Secondary Spectrum of. J. W. Nicholson 1886
,, , Self-Reversal of H_α and H_β Lines of. M. Kimura and G. Nakamura 119
,, , Wave-lengths of Additional Lines in Many-lined Spectrum of. T. Tanaka 2704
Indium and Gallium in Extreme Ultra-violet Region, Spark-Spectra of. M. Weinberg 1102
Infra-red Absorption of Ice. E. K. Plyler 353
,, and Electric-wave Spectra. E. F. Nichols and J. D. Tear 1373
,, Band-Spectra. H. Deslandres 2504
,, Radiation, Near, Absorption of, by Alums. S. Higuchi 352
,, Region, Spectroscopy in. A. Trowbridge 1643
Intercombination Spectral Lines, Intensity Relations of. T. Bouma 2693
Iodine Atom, Absorption Line of. C. Füchtbauer, F. Waibel and E. Holm .. 358
,, ,, , Addendum to Paper "On Absorption Line of." C. Füchtbauer, F. Waibel and E. Holm 1654
,, ,, , Electromagnetic Sensitivity of. W. Steubing 2290
,, Band-Spectrum and Iodine Line-Spectrum, Electrical Excitation of. G. Cario and O. Oldenberg 1894

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Spectra (*see also* Molecular Physics), *continued.*
Iodine Line, 2062 Å., Nature of. L. A. Turner and K. T. Compton 2098
,, Vapour, Regularities in Resonance Spectrum of, and Determination of Moments of Inertia. A. Kratzer and E. Sudholt 2291
Iron Spectrum, Term Names of Multiplets in. S. Goudsmit 562
,, , Spark-Spectra of, in Schumann Region. L. and E. Bloch 854
Isotope Effect in Band-Spectra. IV. Spectrum of Copper Iodide as excited by Active Nitrogen. R. S. Mulliken 2707
Isotopes, Halogen, and Infra-red Reflection Spectra. A. H. Pfund..... 1383
K Absorption Limit of Zinc, Wave-length and Width of. B. Walter 2094
$K_{\alpha 1, 2}$ Doublet of Light Elements and Dependence of X-Ray Spectrum upon Chemical Combination. E. Bäcklin 2520
K_α Doublet on Chemical Constitution, Dependence of. B. B. Ray 1101
,, Doublets in Elements of Lower Atomic Number, Irregularity of. Spark Lines of Copper. M. Siegbahn and B. B. Ray 564
Kathode Spectra of Metals. M. Kimura and G. Nakamura 862
,, ,, ,, ,, and their Salts. M. Kimura and G. Nakamura .. 861
L-absorption Spectra of Elements from Sn (50) to W (74). Y. Nishina..... 1655
Lanthanum Spectrum, Determination of Terms of. S. Goudsmit 1891
Lead and Tin, Series Spectra of. H. Sponer 1650
,, Vapour in Ultra-violet, Absorption Spectrum of. R. V. Zumstein 2508
,, , Absorption and Series Spectra of. J. C. McLennan, J. F. T. Young and A. B. McLay 868
,, , Isotopes of. Bertha Perrette 2023
Light-Emission under Radiation, Stimulation of Atoms and Molecules to. A. Terenin 1362
Lithium-like and Sodium-like Atoms, Spectra of. D. R. Hartree 846, 847
,, Line $\lambda = 6708$ Å., Red, Structure of. D. S. Ainslie..... 863
,, ,, ,, , ,, . J. B. Green 2698
,, Spark-Spectrum, First, Fine Structure in. H. Schüler 1107
L Levels for Radiation of Varying Wave-length, Relative Absorbing Powers of. H. W. B. Skinner 100
Magnesium and Related Elements, Double Excitation Spectra of. J. B. Green and M. Petersen 859
,, , Wave-lengths and Pressure Shifts in Spectrum of. M. Petersen and J. B. Green 2700
Manganese and Chromium, New K Doublet of. N. Seljakow and A. Krasnikow 2522
Mass Spectra of Zirconium, etc. F. W. Aston 123
Mercury Arc, Luminous Vapour from, and Progressive Changes in its Spectrum. (Lord) Rayleigh 2295
,, in Extreme Red, Spark Spectrum of. J. Laffay 1648
,, Line 4358, Structure of. Rita Brunetti..... 869
,, ,, 2270 Å. ($1S - 2p_1$). T. Takamine and M. Fukuda..... 1112
,, -Vapour Lamp, Spectral Energy Characteristics of. G. R. Harrison and G. S. Forbes..... 1178
,, , Band-Spectrum of. E. Hulthén 1896
,, , Singly Ionised Atomic, Absorption of Line of Principal Series of. L. A. Turner and K. T. Compton 1889
,, , Spectra of, from Various Parts of a Discharge Tube. G. Nakamura... 127
,, , Spectrum of, under Heavy Current Excitation. M. Fukuda..... 1374
Monatomic Gas, Spectra of. G. Déjardin 117
Multiple Electron Transitions and Primed Spectral Terms. A. E. Ruark 2691
,, Lines and their Zeeman Components, Intensity of. R. de L. Kronig.. 1879
,, ,, ,, ,, ,, ,, ,, . Part II. R. de L. Kronig 2283
Multiplet Lines, Intensities of. L. S. Ornstein and H. C. Burger 1360
,, ,, , ,, . A. Sommerfeld and H. Hönl 1658
,, Structure. A. Bramley 2694
Multiplets, Intensities of Lines in. H. N. Russell 1882
,, , ,, ,, ,, . Parts I and II. H. N. Russell 2281, 2282
,, , Intensity Measurements in. R. Frerichs..... 1395
,, , Quantum Theory of Structure of, and Anomalous Zeeman Effect. W. Heisenberg 2279
Naphthalene, Absorption of Ultra-violet Rays by Methyl Derivatives of. H. de László 1055
Neodymium Oxide, Notes on. E. L. Nichols 1381

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Spectra (*see also* Molecular Physics), *continued.*
Neon Spectrum, Fundamental Term of. S. Goudsmit 1898
,, ,, , Spontaneous Reversal of Lines of. H. Buisson and C. Jausseran 1388
,, Tubes, Rectification of Light of. G. Claude 1642
,, , Resonance Lines of. G. Hertz 2706
,, , Spark Spectrum of. L. Bloch, E. Bloch and G. Déjardin..... 1652
NH_3 Molecule, Over- and Combination-Oscillations of. G. Hettner 1372
Ni, Arc Spectrum of. K. Bechert and L. A. Sommer 2702
Nickel, Regularities in Arc Spectrum of. F. M. Walters, Jr. 1651
Nitrogen and Hydrogen in the Infra-red, Emission of. A. H. Pfund 121
,, and Oxygen, Ionised, Structure of Spectra of Lines of. F. Croze ... 1093
,, Bands, Negative, Anomalous Intensities in. G. H. Dieke 1390
,, ,, , Structure of Second Positive Group of. Part III. P. Lindau 1094
,, Spark Spectrum, Regularities in. C. C. Kiess 1385
,, , Arc Spectrum of. C. C. Kiess 2505
,, , Effect of Argon on First Positive Band Spectrum of. R. C. Johnson.. 872
,, , Ionised, Structure of Spectrum of. A. Fowler..... 1096
,, , Negative Bands of. M. Fassbender..... 1095
,, , Spectrum of. T. R. Merton and J. G. Pilley..... 1371
,, , Structure of Spectrum Lines of. F. Croze 1092
Optical Screening-Constant Regularities. A. C. Menzies 2496
Oxygen and Sulphur Spectra, Contribution to Knowledge of. E. Bungartz .. 1895
,, , Ionised, Line Spectrum of. F. Croze 1386
,, , Ultra-violet Absorption Bands of. I and II. C. Füchtbauer and E. Holm 2095
Paschen-Back Effect. C. Runge..... 1084
Periodic Structural Regularities of Spectra as related to Periodic Law of Chemical Elements. W. F. Meggers 1364
Phosphorus (P_{III} and P_{IV}), Spectra of Doubly- and Trebly-ionised. M. O. Saltmarsh..... 2297
,, , Spectroscopic Study of Luminescent Oxidation of. H. J. Emeléus and W. E. Downey 1091
Platinum Metals (4500 Å to 9000 Å), Arc Spectra of. W. F. Meggers..... 1375
Polarisation Experiment of Wood and Ellett, Theoretical Interpretation of. J. A. Eldridge 83
Polarised Resonance Radiation in Weak Magnetic Fields. R. W. Wood and A. Ellett 99
Potassium Vapour at High Temperatures, Absorption Spectrum of. N. K. Sur and R. N. Ghosh 1097
,, Vapour, Electrically Luminescent, Absorption of. A. L. Narayan and G. Subrahmaniam 357
,, , Spark-Spectrum of. W. Dahmen 569
PP′ Groups in Atoms of same Electronic Structure, Relations of. I. S. Bowen and R. A. Millikan 2495
Quantum Defect and Atomic Number. L. A. Turner 28
,, Orbits in Atoms of Alkali Metals, Distribution of Probabilities of Passages between. H. Bartels 2022
,, Relations in Series Spectra. R. B. Lindsay 2639
,, Transitions in Band-Spectra, Three-dimensional Method of representing. H. B. Lemon and C. M. Blackburn 2689
Rb and Cs Spectra, Intensity of Doublets in. F. W. Oudt 2709
Red Displacement of Spectral Lines. Note on Maneff's Paper "Gravitation and Principle of Action and Reaction." K. Schaposchnikow 2497
Relativistic Fine-Structure. G. Wentzel..... 2494
Resonance Radiation in Magnetic Fields, Polarisation of. A. Ellett 838
,, ,, , Effect of Magnetic Fields upon Polarisation of. F. Rasetti 335
,, ,, , Influence of Magnetic Fields on Polarisation of. W. Hanle 839
Röntgen Rays, *see* section X-Rays.
Rydberg-Ritz Equation, Constants of. J. H. Jones and J. C. Boyce 481
Scandium and Yttrium, Spectrum Regularities for. W. F. Meggers 563
Secondary Electrons emitted by Elements of Low Atomic Weight. H. Fricke and O. Glasser..... 573
Shielding Doublets, of the Bowen-Millikan Ultra-violet Spectra A. Unsöld... 2711
Silicon, Spectrum of, at Successive Stages of Ionisation. A. Fowler 2093
,, , Ultra-Violet and Infra-Red Spectra of. J. C. McLennan and W. W. Shaver 865

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Spectra (*see also* Molecular Physics), *continued.*
Silver Bands λ3330 and λ3358, Structure of. E. Bengtsson and E. Svensson.. 1110
,, , Gold and Copper, Interrupted Arc Spectra, Pole Lines Occurring in. H. Lowery 851
Sodium at Low Voltages, Spectrum of. F. H. Newman 2294
,, Vapour, Line Breadths and Absorption Possibilities in. G. R. Harrison and J. C. Slater 2699
,, Vapour, Series Limit Absorption in. G. R. Harrison..... 566
,, , Arc Spectrum of. F. J. v. Wiśniewski 571
Solar Spectrum, *see also* section Astronomy.
Solid Salts, Law of Variation of Conductivity of, with Temperature. P. Vaillant 1194
Solidified Gases, Luminescence of, at Liquid Helium Temperatures. L. Vegard, H. K. Onnes and W. H. Keesom 1892
Spark Spectra in Schumann Region. L. and E. Bloch 2500
,, ,, , Alkali, Critical Potentials associated with Excitation of. F. L. Mohler 2089
,, ,, , Excitation of. S. Werner 1377
Spectra excited by Light and by Chemical Reactions. H. Kautsky and O. Neitzke 1366
,, resembling that of Hydrogen and Capacity for Polarisation of Trunk of Atom. E. Schrödinger..... 2284
,, , Common Properties of. H. Deslandres 842
,, , Interpretation of. F. Hund 2692
,, , Origin of. A. Fowler 559
Spectral Frequencies in Region between Visible Light and X-Rays. F. Holweck 1664
,, Lines, Correctness in Ultimate Structure of. G. Joos 2082
,, ,, , Electrically-broadened. M. C. Johnson 2083
,, ,, , Excitation of, by Electronic Impact. II. G. Hertz and J. C. S. de Visser 1876
,, ,, , Intensity of. L. S. Ornstein 2498
,, ,, , ,, . A. Sommerfeld 1361
,, ,, , Quantum Theory and Displacement of. J. Kudar..... 1365
,, ,, , Spreading of. J. Holtsmark and B. Trumpy 1645
,, ,, , Theory of Relation of, to Mass Variations within the Atom. L. B. Ham 2019
Spectrometric Method in Infra-red, Test of. H. Witt 111
Spectroscopic Apparatus, *see* section Apparatus.
,, Displacement Laws, Remarks on. E. Fues 1086
Spectroscopy, Past and Future. C. Fabry 1088
Spectrum Analysis, Photography in. T. T. Baker 1644
,, Lines, Maximum Excitement of, in Layer of Positive Hydrogen Column. E. Lau 2285
,, ,, , Order of Appearance of. F. L Brown and J. W. Beams, Jr. 2503
,, of Radiant Energy, Continuity of. G. Gueben 104
Stark-Effect, *see* section Zeeman-Effect.
Stellar Spectra, Line Intensities in. D. H. Menzel 1584
,, ,, , *see* section Astronomy.
Stripped Atoms of Phosphorus (P_V), Sulphur (S_{VI}), and Chlorine (Cl_{VII}), Series Spectra of. I. S. Bowen and R. A. Millikan 1902
Structure, Fine, Sommerfeld's Theory of, from Standpoint of General Relativity. M. S. Vallarta..... 1874
Sulphur-Vapour Absorption Spectrum and Constitution of. Predissociation of Molecules. V. Henri and M. C. Teves..... 565
Terms in Spectra, Classification of. W. M. Hicks 843
Tesla-Luminescence Spectra. Part V. Some Polynuclear Hydrocarbons. W. H. McVicker, J. K. Marsh and A. W. Stewart 2090
Thallium-Vapour, Absorption and Dispersion of. A. L. Narayan, D. Gunnayya and K. R. Rao 356
Tin, Absorption and Series Spectra of. J. C. McLennan, J. F. T. Young and A. B. McLay 867
Transition Probabilities from Line Absorption, Methods for Determining. J. C. Slater 2081
,, ,, , Relative, in Sodium Atom, Experimental Determination of. G. R. Harrison 2097
Tungsten and Mercury in the Extreme Ultra-violet, Spark-Spectra of. Bayen 1103
,, in the Schumann Region, Spark Spectrum of. L. and E. Bloch.... 1104

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Spectra (*see also* Molecular Physics), *continued.*
Two-Electron Jumps, Special Lines due to. R. A. Millikan and I. S. Bowen . 2300
,, -Valence-Electron Atoms of Phosphorus (P_{IV}), Sulphur (S_V), and Chlorine (Cl_{VI}), Series Spectra of. I. S. Bowen and R. A. Millikan 1903
Ultimate and Penultimate Lines of Astrophysical Interest, List of. H. N. Russell 2080
Ultra-red Absorption Spectra. Experimental and Theoretical Determination of Ultra-red Absorption Spectra of some Organic Substances. L. Márton 2512
,, ,, Spectrum of Ammonia. K. Schierkolk 354
Ultra-violet Absorption in Petroleum. F. Vlès and (Miss) M. Gex 1089
,, ,, Emission Spectra of the Halogens. E. B. Ludlam and W. West 114
,, ,, Portion of Spectra, Intensity Measurements in. H. B. Dorgelo .. 1880
,, ,, Spark-Spectra of Certain Elements. R. J. Lang 1376
,, ,, Spectro-Photometry. T. R. Merton 355
Vacuum-Arc Spectrum of Titanium, Wave-lengths in. H. Crew 124
Vanadium and Chromium in Ultra-violet, Electric Furnace Spectra of. A. S. King 858
,, Spectrum, Structure of. K. Bechert and L. A. Sommer 1389
,, , Ionised, Multiplets in Spectrum of. W. F. Meggers 2509
Visibility of the Spectrum. S. Hecht 102
Water-Vapour, Emission Spectrum of. W. W. Watson..... 572
,, ,, , Fine Structure of Near Infra-red Absorption Bands of. W. W. Sleator and E. R. Phelps 2701
Wave-lengths of Absorption Limits, Determination of. B. Walter 844
Width of Spectral Lines, Influence of Length of Radiating Column on. B. Venkatesachar..... 1085
Zinc and Cadmium, Primary Spark-Spectra of. G. v. Salis 1108
X-Ray Spectra, *see* section X-Rays.
Zeeman-Effect, *see* separate section.

Static and Atmospheric Electricity (*see also* sections Discharge and Radio-activity).
Atmosphere, Electrical Phenomena in. J. Clay 2735
,, , Equilibrium of Ionisation in. J. J. Nolan, R. K. Boylan and G. P. de Sachy 1713
Atmospheric Conductivity and Electric Currents. C. Maurain, E. Salles and G. Gibault 2332
,, Electrical Research, Fundamental Problem of. H. Benndorf ... 1168
,, Electricity. A. Gockel 401
,, ,, and Solar Activity, Correlations between. L. A. Bauer 1169
,, ,, and Theory of Cyclones. H. Markgraf 303
,, Potential-Gradient recorded at the Apia Observatory, Western Samoa, May, 1922, to April, 1924, Preliminary Report on. A. Thomson 402
Atmospherics, Classification and Thermodynamic Properties of. R. Bureau.. 1448
Ball Lighting, Theory of. E. Mathias 181
Charged Particles in Liquid Media, Mutual Action of. E. F. Burton and J. E. Currie 1166
Conducting Dielectric Ellipsoids at Rest in Rotary Electric Field, Turning Moments of. T. Miyazaki 2736
Contact Electricity, *see also* section Batteries, Primary.
,, Electrification by Dust and Cloud-forming Powdered Substances, especially with Snow as Factor producing Storms. A. Stäger 1170
,, Electrification for finely-divided Bodies, particularly Snow, Further Investigations on. A. Stäger 2564
Coulomb's Law and Hydrogen Spectrum. E. B. Wilson 634
Double Layer and Vortex Line, Theorem of Equivalence of. C. de Jans 914
Earth's Electric Field and its Vertical Potential Gradient. S. Ray..... 2565
Electric Charge, Motion of. A. Bramley..... 1700
,, Current considered as Circulation of Equal Charges of Opposite Sign. F. Guéry 917
,, Equilibrium at Surfaces of Metals in Contact. E. H. Hall 1725
,, Potential, Measurement of. A. Wigand and T. Schlomka 180
Electron, Nature of Evidence for Divisibility of. R. A. Millikan..... 2559
Electrostatic Alternator, Simple, Theory of. A. W. Simon 1447
,, Attraction. H. Schering and R. Schmidt 1445
Electrostatics, New. H. Bateman 1162
Electrostriction in Insulating Liquids. G. Bruhat and M. Pauthenier 1195

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Static and Atmospheric Electricity (*see also* sections Discharge and Radio-Activity), *continued.*

Electrostriction in Liquids which are only Slightly Birefracting. M. Pauthenier 920
Elementary Charge E from Measurements of Shot-Effect, Determination of. A. W. Hull and N. H. Williams 1458
Frictional Electricity, Anomaly in. A. O. Rankine 178
Gases by Surface Combustion, Electrification of. J. Dickinson 2563
Hertzian Waves in Solids near Point of Fusion, Dispersion of. J. Errera.... 918
Ice, Absorption of Electromagnetic Waves by. J. Granier 915
Influence Electrostatic Generator, Quantitative Theory of. A. W. Simon ... 919
Liquid-gas Interface, Electrical Charges at. H. W. Gilbert and P. E. Shaw... 2133
Mercury Droplets, Reply to T. Sexl's Criticism of R. A. Millikan's Method of Computation of Elementary Electrical Charge on. J. B. Derieux 2558
Microscopic Particles, Electric Charges carried by. T. Sexl 2557
Millikan Condenser, Measurements in. Y. C. Yang 1446
Oblate Spheroidal Harmonics and their Physical Applications. J. W. Nicholson 1306
Permanent Electret. M. Eguchi..... 1165
Point Discharge and Electric Wind. W. Deutsch 1709
Polarised Dielectrics, Field of Force in. A. Caldi 2734
Quantitative Theory of Electrostatic Systems. A. W. Simon..... 2561
Raindrops, Elster and Geitel's Theory of Electrification of. T. E. W. Schumann 2560
Residual Charge, Variation of, and Ratio of Electrical Conductivity to Capacity due to Temperature. H. Saegusa 916
Soap-bubbles, Bursting of, in Uniform Electric Field. C. T. R. Wilson and G. I. Taylor 2331
Solids of Revolution, Certain, Electric Capacity of. D. M. Wrinch 2132
Specific Inductive Capacity of Ice. B. de Lenaizan and J. Granier 1164
Sub-Electron Question, Mathematical Statistical Investigation of. H. Daecke 788
Voss Machine, Four-Carrier, Quantitative Analysis of. A. W. Simon 1167
Waterfall Electric Carrier-formation with Pure Water and Salt Solutions. Surface Conditions. W. Busse 1702

Surface Tension.

Boundary Lubrication. W. Hardy and I. Bircumshaw 2414
Capillarity and Friction Coefficients of Viscous Fluids, Measurement of. Emma Müller 1294
Capillary Rise in Tubes of Various Metals. E. K. Carver and F. Hovorka ... 1794
Constant N of Avogadro. P. L. du Noüy..... 2614
,, ,, , New Determination of. L. M. Alexander 1752
,, ,, ,, ,, , based on its Definition. P. L. du Noüy 431
Detachment Method, Theory of. J. J. Tichanovsky 2418
Drops, Fall of, in Viscous Media, *see* section Viscosity.
Electrolyte Solutions, Dilute, Surface Tension of. C. Wagner 741
Flotation, Surface Reactions in. A. W. Fahrenwald 744
Fluid Flow, New Theory of. A. B. Cox 766
Gas Flows through Capillary Tube and Reynolds' Criterion. J. Satterly 745
Interaction Phenomenon, Explanation of so-called, between Solutions and Molecular Significance of Negative Surface-tension. N. K. Adam and G. Jessop 2384
Liquid Columns, Round, Influence of Degree of Instability on Phenomena of. R. A. Castleman, Jr 768
Liquids under Influence of Radiation, Variation of Surface Tension of. A. Grumbach and S. Schlivitch 2411
,, , Molecular Rotation and Flow of. H. Baudisch..... 767
,, , Property-Composition Curves of Binary Mixtures of. L. Frank..... 903
Lubricating Oils, Measurement of Effectiveness of. R. v. Dallwitz-Wegner .. 257
Lubrication, Boundary: Influence of Composition of the Solid Face. I. Doubleday 256
,, , Chemistry of. W. F. Seyer and S. R. McDougall..... 743
Mercury, Capillary and Photoelectric Properties of. J. G. Popesco..... 2413
Molecular Diameters from Surface-tension Measurements. S. Mokroushin .. 37
,, Interaction in Liquid State, Theory of. G. N. Antonoff 2126
Number N and Certain Molecular Dimensions, New Method of Determining, based on Study of Surface Equilibrium of Colloidal Solutions. P. L. du Noüy..... 2769

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Surface Tension, *continued.*
Scattering of Light by Liquid Boundaries and its Relation to Surface-tension. C. V. Raman and L. A. Ramdas 2268, 2677
Skin Friction of Flat Surfaces, Effect of Length on. T. E. Stanton and Dorothy Marshall 255
Surface Films, Kinetic Theory of. Part I. Surfaces of Solutions. R. K Schofield and E. K. Rideal 2412
,, -tension and Density-Difference. G. N. Antonoff 260
,, ,, from Rise in Capillary Tubes, Determination of. S. Sugden.. 1292
,, ,, on Density and Temperature, Dependence of. W. L. Lewschin 258
,, ,, , Apparatus for Rapid Measurement of, at Surface of Separation of Two Liquids. P. L. du Noüy 2003
,, ,, , Interpretation of the Eötvös Relation. L. Brillouin 1795
,, ,, , Ring Method of Measuring. P. E. Klopsteg 742
,, ,, , Surface Energy and the Surface Layer. Part I. A. M Williams 150
Tetralin, Dekalin and Spindle-Oil, Surface Tension of. L. Grunmach and G. Schweikert 259
Thin Films, Molecular Structure of. Part VI. N. K. Adam and J. W W. Dyer 998
Turbulence, New Researches upon. L. Schiller 762
Viscous Liquid, Motion of Spheres, Circular and Elliptic Cylinders through. W. J. Harrison 769

Temperature.
Air Temperature, Measurement of, in Closed Spaces with Thermometers not Protected from Radiation. H. Hausen 894
Benedick's Effect in Vacuum. E. Rumpf..... 152
Freely Cooling Blocks of Iron, Distribution of Temperature in. H. Schmick 2719
Incubation, Artificial, Scientific Principles of. L. B. Atkinson..... 621
Liquids, Critical Temperature and Dilatation of. N. de Kolossowsky 1920
Molybdenum, Temperature Scale and Melting-point of. A. G. Worthing..... 2307
Pipe-line Temperature Measurements. E. S. Bristol 1428
Temperature Dependence Parameter, Statistical Consideration of, and Debye Theory of Electrolytes. P. Gross and O. Halpern 2321
,, Gradient in Gases at Various Pressures. W. Mandell and J. West 1144
,, Scale and Heat Unit, German Legal. M. Jakob 381
,, ,, , Optical, Fundamental Data for Use of. F. Henning and W. Heuse 2308
,, Scales, *see also* section Thermometry.
Thermostats, Mechanical. J. R. Roebuck 2309
Tungsten and Candle-power of Black Body, Characteristics of. C. Zwikker.. 2668
Unilateral and Periodically Heated Walls, Distribution of Temperature, Passage of Heat and Storage Power in. C. Schwarz 2720
Vapour arising from a Solution, Temperature of. W. Möbius 1434
Velocity of Sound in Liquids and its Relation to Heats of Vaporisation. V. Ionescu 1153

Temperatures, High and Low.
Cold, Production of. C. W. Kanolt 591
Condensation Nuclei produced by Illumination of Air-Halogen Mixtures. I. C. Jones 2541
Deposits from Molecular Rays, Formation of, Influence of Ray Density and Geometrical Dimension upon. J. Estermann..... 2317
Dew-points of Fuel-Air Mixtures, Method of Determining. R. J. Kennedy ... 2722
Diamond *in vacuo* at High Temperatures, Transformation of. P. Lebeau and M. Picon..... 893
Frigorimeter, Davos. Instrument for Permanently Registering Extent of Physiological Cooling. R. Thilenius and C. Dorno 1430
Hydrogen Liquefying Cycle and Cryostat for the Maintenance of Low Temperatures. W. M. Latimer, R. M. Buffington and H. D. Hoenshel..... 2117
Measurements, *see* separate section.
Mixtures, Binary, Specific Heats of. J. W. Williams and F. Daniels..... 2539
Plastic Extension of Metals, Heat developed during. W. S. Farren and G. I. Taylor 1764
Platinum Resistance Thermometry at Low Temperatures. M. S. van Dusen 1429

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Temperatures, High and Low, *continued.*
Refrigerating Machines employing Throttle Expansion, Coefficient of Performance of. A. W. Porter 590
Superheating of Liquids. F. B. Kenrick, C. S. Gilbert and K. L. Wismer ... 594
Thermostats for Very High Temperatures. L. H. Adams 389
Tungsten Furnace for High Temperature. W. Fehse 592

Terrestrial Magnetism and Electricity.
Atmospheric Electricity, *see* section Static Electricity.
Earth Magnetic Measurements, Construction of High-sensitivity Instrument for. H. Haalck 1392B
Earthquakes and Magnetic Storms. Watheroo Magnetic Observatory, Western Australia, January to March, 1924. G. R. Wait 426
Earth's Electric Field and its Vertical Potential Gradient. S. Ray..... 2565
,, Field, Measurement of Local Variations of, using an Earth Inductor. H. Haalck 2604
,, Magnetic Field, Physical Nature of. G. Angenheister 1741
Horizontal Component of Earth's Magnetisation, After-disturbances, Activity and Diurnal Variation of. W. van Bemmelen 1740
Lunar Diurnal Magnetic Variation at Greenwich and other Observatories. S. Chapman 2163
Mangetic Anomaly, Koursk. P. Lasareff 423
,, Declination in 1924. Principal Stations of Soviet Socialist Republics. A. Pödder 428
,, Disturbances, Abruptly-beginning. L. A Bauer and W J. Peters 2602
,, Elements in 1915 for Latin America and Adjacent Waters, Preliminary Lines of Equal Annual Change of. H. W. Fisk 1492
,, Network of France, New. E. Mathias 683
,, Storms, Huancayo Magnetic Observatory, Peru, April to June, 1924. W. C. Parkinson 427
Magnetometer Deflection-Constants, Differential Method for Deriving. H. W. Fisk and C. R. Duvall 1975
Meterology, *see* separate section.
Network of France, New. E. Mathias 683
Solar Constant and Terrestrial Magnetism, Relationship between. C. Chree.. 2603
Sunspots, Terrestrial Magnetism and Atmospheric Electricity, Relations between. C. Chree 2162
Tabular Quantities, Computation of. F. Neumann 429
Terrestrial Magnetism. D. L. Hazard 1739
,, ,, and Electricity at Madrid Meeting, October, 1924. L. A. Bauer 1222
,, ,, , Department of. L. A. Bauer and J. A. Fleming 1221

Terrestrial Physics.
Antarctic Sea-Ice, Problems relating to. R. W. James 47
Bodily Tide on Fluid Earth. H. Jeffreys 1020
Continental Masses, Acceleration of, towards Equator. R. Wavre 2239
, Mechanics. J. W. Evans 2451
Earth Currents, *see* section Terrestrial Magnetism and Electricity.
,, , Chemical Composition of. H. S. Washington 1844
,, , Cooling of. H. Jeffreys 1843
,, , Figure of, and Mean Motions of Moon's Perigee and Node. H. S. Jones.. 809
,, , If it went Dry ? N. Shaw 302, 1842
,, , Metric Verification of Ovoid Shape of. C. Gorceix 1022
Earthquake Focus, Depth of. S. K. Banerji 1023
,, , Great Japanese, of September 1, 1923. K. Suda 46
Earthquakes and Magnetic Storms, Watheroo Magnetic Observatory, Western Australia, January to March, 1924. G. R. Wait 126
,, , So-called " Annual " Periodicity in Occurrence of. H. H. Turner 811
Earth Temperatures at Moderate Depths. L. H. Adams 810
Earth's Crust, Size of Block of, Independently in Isostatic Equilibrium. W. Bowie 492
Elements in Earth, Radial Distribution of. H. S. Washington 808
Geophysics. H. Lamb 2645
Glaciers, Deductions from Recent Researches on Periodic Variations of. U. Mònterin 309

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Terrestrial Physics, *continued.*
Gravitational Field, External and Internal Densities. M. Brillouin 1833
India, Survey Records of 1742
Lake Level in Relation to Rainfall and Sunspots. F. Dixey 307
Magnetic Storms, Huancayo Magnetic Observatory, Peru. W. C. Parkinson.. 427
Microseismic Disturbances, Possible Cause of. J. Lacoste 48
Oceans, Temperature Lag of. W. J. Humphreys 807
Tidal Constants, Harmonic, Perturbations of. A. T. Doodson 308
,, Dynamics, Theorem in. J. Proudman 1547
Tides, Integration of Equation of Dynamical Theory of. M. Gevrey..... 806

Thermionic and Electronic (Thermal) Emission (*see also* section Discharge).
Actinium Active Deposit Ions, Mobility of. H. A. Erikson 1186
Advanced Potentials and Atomic Models. L. Page 176
Cæsium Vapour, Photoelectric Ionisation of. P. D. Foote and F. L. Mohler.. 2747
Canal Rays, Lighting of, at High Pressures and Question of Delay Time (Verweilzeit). W. Wien 1185
Critical Potentials of Gases, Precise Measurement of. E. G. Dymond 1949
Electric Lamps, Thermionic Currents in. P. Selényi 195
Electrical Counter, Action of. K. G. Emeléus 2342
Electrified Spherical Corpuscles. L. Décombe 787
Electron Emission from Adsorbed Films on Tungsten. K. H. Kingdon 645
,, ,, from Oxide-coated Filament. L. R. Koller 1948
,, ,, of Metals. A. Becker 928
,, Reflexion in Gases : Researches on Hydrogen. H. Baerwald 2136
Electronic Bombardment of Metal Surfaces. H. E. Farnsworth 1183
Electrons from Hot Bodies, Statistical Theory of Emission of. S. C. Roy.... 2341
,, through Small Apertures, Passage of. J. F. Lehmann and T. H. Osgood 2338
,, , Heat of Evaporation of. J. J. Weigle 1467
,, , Motion of, between Coaxial Cylinders under Influence of Current along the axis. A. W. Hull 2138
Elementary Charge E from Measurements of Shot Effect, Determination of. A. W. Hull and N. H. Williams 1458
Emission of Ions from Hot Metals by Quantum Theory, Modification of Laws of. S. C. Roy 409
,, , Thermionic, Variation of, with Temperature and Concentration of Free Electrons within Conductors. A. T. Waterman..... 646
Glow Electronic Emission at Transformation and Melting-points. A. Goetz.. 1718
Photoelectric Action, Mechanism of. S. Ray 2345
,, Emission and Electric Conductivity of Platinum, Effect of Gas Absorption on. K. Herrmann 2572
,, Emission, Effect of Kathode Rays on. H. Dember 2574
Photoelectrons, Experimental Study of Direction of Emission of. P. Auger.. 2340
,, , Longitudinal Asymmetry in Direction of Ejection of. O. K. DeFoe 1958
,, , Quantum Theory on Asymmetries in Direction of Ejection of. F. W. Bubb 1959
,, , Red Limit and Emission Energy of. R. Suhrmann 2337
Potassium Vapour as Function of Frequency of Light, Photoelectric Effect in. E. O. Lawrence 2339
Slow Electrons in Electric Fields, Diffusion of. G. Hertz 2139
,, ,, in Gases, Absorption Coefficient for. R. B. Brode..... 1947
Space Charge Effect. E. W. B. Gill..... 1955
Thermic Emission of Electrically-charged Particles. H. J. Spanner 617
Thermionic Currents and Space Charge. W. S. Kimball 1956
,, Effect from Standpoint of Phase Rule. N. v. Raschevsky 2579
,, ,, , Kinetic Theory of. N. v. Raschevsky 2578
,, Effects caused by Vapours of Alkali Metals. I. Langmuir and K. H. Kingdon 1182
,, Electrons, Distribution of Initial Velocities among. L. H. Germer 2344
,, Emission. N. v. Raschevsky 2343
,, Work-functions and Photoelectric Thresholds of Alkali Metals. O. W. Richardson and A. F. A. Young 1720
,, Work Function of Oxide-coated Platinum. G. Davisson and L. H. Germer 1181

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Thermionic and Electronic (Thermal) Emission (*see also* section Discharge), *continued.*

Triodes, Diagram of Plate Current in. O. M. Corbino and E. Persico 1961
Tungsten and Candle-power of Black Body, Characteristics of. C. Zwikker.. 2668
,, , Molybdenum and Tantalum, Electron Emission from. S. Dushman, H. N. Rowe, Jessie Ewald and C. A. Kidner..... 1717

Thermodynamics (*see also* section Gases).

Black (Heat) Radiation, Mechanics of Quantum Relation in Case of. S. Ray 1925
Bose-Einstein Statistics, Demonstrations from. A. Smekal 2547
Capillary Layer, Thermodynamics of. G. Bakker..... 616
Carnot's Theorem, Proof of Corollary of. A. E. Ruark..... 1696
Chemical Equilibrium, *see also* separate section.
Constant i of the Thermo-dynamic Vapour-Pressure Equation for Molecules containing more than one Atom. A. Eucken, E. Karwat and F. Fried 165
Cooling a Gas Prior to Compression. G. Patart 1147
Corresponding Temperatures of Solid Bodies. H. Lafuma 166
Dispersion of Energy in a Standard Aggregate of Gases. Ippisch..... 2727
Emission, Thermionic, Variation of, with Temperature and Concentration of Free Electrons within Conductors. A. T. Waterman 646
Entropy and State Probability of Perfect Gas. F. v. Hauer 1697
,, of Condensed Gases. A. Eucken and F. Fried 157
,, ,, ,, at Absolute Zero, Criticisms of Eucken's Work on. F. Simon 1438
,, of Condensed Gases, Reply to Criticisms of F. Simon on. A. Eucken and F. Fried 1698
,, of Gases and Theory of Quanta. II. Chemical Constant of Monatomic Gases. A. Schidlof 156
,, of Real Gases, Absolute Value of. Part II. V. Njegovan..... 1152
,, of Supercooled Liquids at Absolute Zero. L. Pauling and R. C. Tolman 2730
Equation of Heat, Quasi-analytical Solutions of. E. Holmgren 168
,, of State for Gases and Molecular Association. A. Leduc 1436
Equations of State of Form $p = T\phi(v) + \psi(v)$, Problem of Systems related to. N. J. Koltschin 1151
Equipartition of Energy in System Comprising Vibrating or Rotating Particles, Inapplicability of, by J. Jaffé. R. Becker 619
Gas Equations, Validity Ranges of. I. W. Herz 898
,, , Theory of, and Equation of State. J. Duclaux 611
Gases, Thermic Slip in. M. Czerny and G. Hettner 900
Helium, Joule-Thomson Effect for. J. H. Perry 901
Isothermals of some Gases between 400° C. and −183° C. L. Holborn and J. Otto 2549
Joule-Effect for CO_2, Recent Measurements of. F. G. Keyes and F. W. Sears 1435
Liquid Chains, Thermodynamics and Kinetics of. H. Schiller 717
Liquids, Property-Composition Curves of Binary Mixtures of. L. Frank.... 903
Logarithmic Isochromates, Method of. H. Schmidt 169
Mechanical Transformability (Adiabatic Hypothesis), Principle of. M. v. Laue 2128
Monatomic Perfect Gas, Quantum Theory of. A. Einstein 159
Perfect Gas, Definition of. A. L. Clark..... 897
,, ,, , Monatomic Quantum Theory of. A. Einstein 1439
,, ,, , Quantum Theory of. A. Einstein 1440
Pressure Equations for Liquid and Vapour Mixtures and their Application to Air. V. Fischer 613
Quantising Systems containing Identical Elements. E. Fermi 162
Radiation, Infra-red, and Combustion Rate of Gases. W. T. David 2548
Reciprocal Theorem, Physical Significance of. W. Jazyna 1150
,, ,, , Proof and Basis of. W. Jazyna 1149
,, ,, , So-called, Physical Bases of. H. Hausen 617
Specific Heat at Absolute Zero and Thermodynamical Invariants. W. Jazyna 151
,, ,, C_v, Internal Energy U and Equation of State of a Body. H. Hausen 1148
Statistical Equilibrium between Atoms, Electrons and Radiation. P. A. M. Dirac..... 411
Steady Flow of a Gas in Two Dimensions. S. Lees 158
Surface Tension, Surface Energy and the Surface Layer. Part I. A. M. Williams 150

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Thermodynamics (*see also* section Gases), *continued.*

Temperature Dependence Parameter, Statistical Consideration of, and Debye Theory of Electrolytes. P. Gross and O. Halpern 2321
,, -entropy Diagrams for Nitrogen and Oxygen. W. H. Rodebush, J. W. Andrews and J. B. Taylor 1437
,, Scale and Heat Unit, German Legal. M. Jakob 381
Thermal Equilibrium in Atmosphere. C. G. Rossby 618
Thermic Radiation, Thermodynamic Foundations of Theory of. P. Straneo.. 1142
Thermodynamic Temperature of Gas, Kinetic and Electromagnetic Definitions of. E. Wertheimer 2124
Thermodynamics, Phenomenonological, Extension of, to Oscillation Phenomena. L. Szilard 2325
Third Law of Thermodynamics and Calculation of Entropies. T. J. Webb .. 2324
Trouton's Law at Absolute Zero of Temperature. N. Perrakis 1691
Vaporisation, Kinetic Theory of. S. C. Bradford 164
van der Waals' Equation of State. J. J. van Laar..... 2550
,, ,, ,, ,, and the Liquid State of Aggregation. I and II. J. Berger 167, 2127

Thermo-Electricity and Thermo-Magnetism.

Axial Galvano- and Thermo-magnetic Effects. A. Sellerio 2356
Benedicks' Effect in Vacuum. E. Rumpf 152
Cupro-Nickel, Reversible Anomaly of, in Domain of Paramagnetic State. P. Chevenard..... 2365
Ferronickels, Magnetisation of. M. Peschard..... 2160
,, , Thermomagnetic Properties of M. Peschard 2159
Measurements, *see* separate section.
Richardson-Effect. D. Reichinstein 1721
Selenium Contact Rectifiers, Effect of Light on Behaviour of. E. Merritt.... 2753
,, , Effect of Light on Thermoelectric Power of. R. M. Holmes 2355
Thermocurrents in Electrolytes. J. Thiele 1777
Thermoelectric Condition and Structure of Pure Iron. A. Goetz 1726
,, ,, of Pure Iron at its Transition Points. A. Goetz ... 659
,, Properties of some Steels, Influence of Heat Treatment on. P. Nicolau 2591
Thermo-Elements in Measurement Technique of Heavy Chemical Industry, Applications of. P. Gmelin 1138
Thermomagnetic Effects, Four Transverse, and their Relations in certain Metals. E. H. Hall 2751
Thomson-Effect in Copper, Iron and Carbon Steels. J. Young 1965
Throttle Cross in Vacuum. C. Benedicks and G. Phragmén 2354

Thermometry, Pyrometry and Calorimetry.

Air Temperature, Measurement of, in Closed Spaces with Thermometers not Protected from Radiation. H. Hausen 894
Apparatus (*see* separate section).
Calorimetric Bomb, Berthelot, Destruction of, and its Replacement by Bomb of New Type C. Moureu 1431
Coloured Glass Used in Optical Pyrometry, Effective Wave-Length of. F. Henning 817
Combustion of Solid Substances, Heat of. W. Jaeger and H. v. Steinwehr .. 967
Equilibria at High Pressures, Application of Pyrometric Method to Investigation of. N. A. Puschin and J. V. Grebenschtschikow..... 391
Flow Calorimeter for Specific Heats of Cases. N. S. Osborne, H. S. Stimson and T. S. Sligh, Jr. 2538
Frigorimeter, Davos. Instrument for Permanently Registering Extent of Physiological Cooling. R. Thilenius and C. Dorno 1430
Gaseous Mixtures, Effect of Radiation on. H. Senftleben..... 2323
γ-Rays in Radioactive Disintegration, Quantity of Heat liberated in Emission of. J. Thibaud 1918
Heat Content of Certain Condensed Gases, Determination of. A. Eucken and E. Karwat 609
Heating Value of Gas, Measurement of. C. V. Boys 394
Heats of Solutions of Alkali Halides Diluted and Saturated, Determination of. J. Wüst and E. Lange 599

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Thermometry, Pyrometry and Calorimetry, *continued.*

Hg Molecules, Determination of Heat of Dissociation of, from Band Spectrum of Hg Vapour. E. Koernicke 2318
Isotherms of Helium, Nitrogen and Argon below 0°. L. Holborn and J. Otto 1146
Light and Photophoresis Pressure of Calorimetric Measurements relating to. J. Ramler 1641
Micro-Calorimeter and Small Combustion Bomb. W. A. Roth and R. Lassé.. 895
Platinum Resistance Thermometry at Low Temperatures. M. S. van Dusen.. 1429
Pyrometers, Optical. W. E. Forsythe 1137
Solution, Heats of, and Dilution of Salts, Extreme Dilution to Saturation. Part I. J. Wüst and E. Lange 2319
,, , Heats of, and Heats of Incomplete Reaction. (Miss) Bérenger and A. Tian 2320
Superheated Steam at High Pressures, Total Heat of. New Method of Measurement, including Latent Heat. H. L. Callendar 2540
Temperature Scale and Heat Unit, German Legal. M. Jakob 381
Thermo-Elements in Measurement Technique of Heavy Chemical Industry, Application of. P. Gmelin 1138
Thermometers, Resistance, Theory of. J. Friese and E. Waetzmann 1136

Vapour Pressure.

Aqueous-Vapour-Pressure of Capillary Systems, Indirect Measurement of, by Freezing-point Depression of Benzene. E. M. Crowther and A. N. Puri 163
Constant i of the Thermodynamic Vapour-Pressure Equation for Molecules containing more than one Atom. A. Eucken, E. Karwat and F. Fried 165
Evaporation of Small Drops of Water. N. Gudris and L. Kulikowa..... 384
,, , Kinetic Theory of. D. B. Macleod 2120
Gaseous Equilibrium Constants, Calculation of. S. W. Saunders..... 612
Hydrocyanic Acid, Saturated-Vapour Pressure of. R. Hara and H. Sinozaki 1140
Hydrogen Cyanide, Critical Constants and Vapour-Pressures of. G. Bredig and L. Teichmann 2725
Hydrogen Fluoride, Gaseous, Density and Molecular Complexity of. J. Simons and J. H. Hildebrand 388
,, Fluoride, Preparation, Freezing-point and Vapour-Pressure of. J. Simons 387
Ice and Water, Vapour-Pressure of, below Freezing-point. E. W. Washburn 904
Ionisation, Simple Kinetic Derivation of, and Vapour-Pressure Equation. R. Becker..... 186
Mercury, Saturation Pressure of, up to 2000 kg./cm². F. Bernhardt 1923
Monatomic Substances, Vapour-Pressure of. A. C. Egerton..... 1139
Nitro-Anilines, Vapour-Pressure of. J. F. T. Berliner and O. E. May 2728
Partial Pressures of Liquid Mixtures at Boiling-point, Effect of Non-volatile Solute on. B. H. Carroll, G. K. Rollefson and J. H. Mathews..... 2314
Rochelle Salt, Vapour-Pressures of, Hydrates of Sodium and Potassium Tartrates, and their Saturated Solutions. H. H. Lowry and S. O. Morgan 386
Solid Hydrogen Chloride, Methane and Ammonia, Vapour-Pressure of. E. Karwat 610
Solution with Simple Solvent and Non-volatile Solute, Method of Calculating Vapour Pressure of. S. B. Mali 2125
Tellurium, Vapour-Pressure of. J. J. Doolan and J. R. Partington 1141
Vaporisation of Liquid Mixtures. J. F. King and S. P. Smedley..... 385
,, , Kinetic Theory of. S. C. Bradford 164

Viscosity.

Adherence of Perfect Liquid to Solid with which it is in Contact and Theorem of Lagrange. M. Roy 994
Aniline and its Aqueous Solutions, Physical Properties of. M. P. Applebey and P. G. Davies 2409
Binary Mixtures, Viscosity of. D. B. Macleod..... 988
Boundary Lubrication. W. Hardy and I. Bircumshaw 2414
Continuous Viscous Liquids, Plane Vertical Motion of. J. Gralou 7
Diffusion Velocity, Viscosity and External Pressure, Relation between. E. Cohen and H. R. Bruins 1291
Emulsions, Reversible, Viscosity of. S. S. Joshi 2004
Ethyl Ether near Critical Point, Viscosity of. A. L. Clark 746
Flotation, Surface Reactions in. A. W. Fahrenwald 744

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Viscosity, *continued.*

Fluid Flow, New Theory of. A. B. Cox 766
Gas Flows through Capillary Tube and Reynolds' Criterion. J. Satterly 745
Glass, Allotropy of. H. le Chatelier 6
,, , Viscosity Measurements with. V. H. Stott, Edith Ervine and D. Turner 1792
,, , ,, of. H. le Chatelier 5
Liquid Columns, Round, Influence of Degree of Instability on Phenomena of. R. A. Castleman, Jr. 768
,, Halogens, Viscosities of. E. W. R. Steacie and F. M. G. Johnson..... 1541
Liquids containing Dissolved Gases, Viscosity of. J. R. Lewis 1542
,, , Molecular Rotation and Flow of. H. Baudisch..... 767
,, , Property-Composition Curves of Binary Mixtures of. L. Frank 903
Lubrication, Chemistry of. W. F. Seyer and S. R. McDougall..... 743
Measurements, *see* separate section.
Molecular Interaction in Liquid State, Theory of. G. N. Antonoff..... 2126
Solids, Vibrating, Experimental Determination of Viscosity of. S. L. Quimby 1793
Turbulence, New Researches upon. L. Schiller 762
Viscosity and Electrolytic Conductivity, Variation of, with Temperature. M. Wien 2797
Viscous Fluid, Cinematographic Measurements of Downward Motion of Spheres in, and also in Close Proximity to Wall. H. Liebster and L. Schiller.. 1303
,, Liquid, Motion of Spheres, Circular and Elliptic Cylinders through. W. J. Harrison 769
Vortex Motion in Resisting Medium with Application to Planetary Vortices. E. Belot 993
Water, Determination of Viscosity of. le Roux 1540

Vision.

After-Images, Recurrence and Decay of. Winifred J. Smith 1617
Binocular Vision and Stereoscopic Sense. R. J. Trump 517
Colorimetry, *see also* section Absorption (Light).
Colour Contrast, Reflex Origin of. F. Allen 515
Contrast Sensitivity of Fovea, Effect of Peripheral Illumination of Retina on. S. A. Emerson and L. C. Martin 2250
Eye Fatigue and Intensity of Illumination. P. W. Cobb and F. K. Moss 1315B
Human Eye, Double Chronaxy in. G. Bourguignon and R. Déjean..... 1054
Optical Records and Relativity C. L. Morgan 324
Optometer for Visual and Chromatic Acuity. E. Guérin..... 327
Pictures, Depth Illusion in. A. Ames, Jr. 1338
Retina, Varying Wave-Length of Stimulating Light upon Electrical Response of. E. L. Chaffee and A. Hampson 812
Stigmatic and Orthoscopic Corrections. C. W. van der Pijl 2249
Undulation in Vision, Period of. N. Kleitman and H. Piéron 1339
Visibility, Measurement of. A. Wigand 2676
Vision, Phenomenon of, and Kinema Theatre. K. C. D. Hickman 1316B
Visual Acuity and Colour. M. Luckiesh and F. K. Moss 1616
,, Sensory Reflexes and Colour-Blindness. A. Hollenberg 516

X-Rays.

Abnormal Reflection of X-Rays. J. H. Smith 1120
Absorption of X-Rays. E. C. Stoner and L. H. Martin 1666
Aliphatic Ketones, Saturated, X-Ray Investigation of. W. B. Saville and G. Shearer 1556
Alkali Halides by X-Rays, Coloration of. P. L. Bayley 581
Alloys, X-Ray Examination of. A. Sacklowski..... 2622
Apparatus, *see* separate section.
Bohr Atom. R. A. Millikan and I. S. Bowen 31
Braked-down Radiation and Compton's Scattered Radiation. G. Mie 2515
Brass, Electrolytic, X-Ray Analysis of. H. Nakamura 2177
β-Rays associated with scattered X-Rays, Measurements of. A. H. Compton and A. W. Simon 1669
,, , Secondary, produced in Gas by X-Rays. P. Auger 1124
Calcite, Determination of Angle between Cleavage Faces of, by Use of X-Rays. H. N. Beets 1814
,, Index of Refraction of, for X-Rays. C. C. Hatley 582

For the **Explanation** of this Index see p. 947.

Abstract Nos.

X-Rays, *continued.*
Celluloses during Swelling in Aqueous Solutions, Changes in Röntgenograms of. J. R. Katz and H. Mark 2172
Chemical Elements, Level Values of X-Ray Spectra of. D. Coster 1667
,, ,, ,, ,, ,, ,, ,, . B. Walter 1114
Coal, X-Ray Analysis of. C. N. Kemp 370
Compton and Duane Effects. J. A. Becker 574
,, -Effect. G. Wentzel 2514
,, ,, with no Box around Tube. P. A. Ross and D. L. Webster... 1401
,, ,, : Evidence on its Relation to Duane's Box-Effect. P. A. Ross and D. L. Webster 1402
,, ,, , Nature of; Experimental Contribution to Theory of Radiation. W. Bothe and H. Geiger 2099
,, ,, , Quantum Theory of Intensity of Modified Band in. G. E. M. Jauncey 2100
,, ,, , ,, ,, of Unmodified Spectrum Line in. G. E. M. Jauncey 1670
,, ,, , Theory of Width of Modified Spectrum Lines in. G. E. M. Jauncey 1399
,, ,, , Wave-Theory of. C. Eckart, F. W. Bubb 1400
Constant Voltage High-tension Generators. C. E. S. Phillips 2369
Copper-Zinc, Silver-Zinc, and Gold-Zinc Alloys, X-Ray Analysis of. A. Westgren and G. Phragmén 2178
Crystal Powder Analysis by X-Rays, Focusing Method of. J. Brentano 1663
Diffraction of X-Rays by Wedge-shaped Slit. I. I. Rabinov 1908
Doublet Separations, X-Ray, in Optical Spectra. I. S. Bowen and R. A. Millikan 135
,, Spectra, Term Problems in. G. Wentzel 2102
Electron Discharge produced by X-Rays, Asymmetry of. W. Seitz 580
,, Orbits, Possible Reconciliation of Bohr's Interpenetration Ideas with Sommerfeld's Relativistic Treatment of. R. A. Millikan and I. S. Bowen 1825
,, , Intrinsic Frequency of. L. de Broglie 1561
Electrons, Distributions of, among Atomic Levels. E. C. Stoner 38
Emission, X-Ray, Dependence of, on Form of Discharge. M. Müller 134
Fatty Acids and Di-Acids, Study of, by Means of X-Rays. J. J. Trillat 1818
,, ,, , Structure of. X-Ray Analysis. G. Friedel..... 1317
Fluorescent and Scattered X-Rays, Relative Intensities of. G. L. Clark and W. Duane 1668
High-frequency Radiation, Phenomena of. de Broglie 128
Identification of Various Substances, and, in particular, Natural Pearls, Application of X-Rays for. A. Dauvillier 2524
Indices of Refraction of Elements and Compounds, and Relation between critical potentials. B. Davis 2667
Insulator Test Set, Portable. N. P. Carlsen..... 51B
Interference Experiments, Optical, and Compton Shift. S. J. Wawilow 2267
Ionisation of Air by X-Rays of Different Wave-lengths, Consumption of Energy on. L. Grebe and L. Kriegesmann 368
Ionising Air by Means of X-Rays of Different Wave-lengths, Experimental Determination of Energy used in. L. Kriegesmann 2103
J Phenomena in X-Rays. C. G. Barkla 2525
K Absorption Limit of Zinc, Wave-length and Width of. B. Walter..... 2094
K Röntgen-Ray Absorption Spectra of Si, Ti, V, Cr, Mn and Fe. A. E. Lindh 1398
$K_{\alpha 1,2}$ Doublet of Light Elements and Dependence of X-Ray Spectrum upon Chemical Combination. E. Bäcklin 2520
K_{α} Doublet on Chemical Constitution, Dependence of. B. B. Ray 1101
,, Doublets in Elements of Lower Atomic Number, Irregularity of. Spark Lines of Copper. M. Siegbahn and B. B. Ray 564
Kernels of Ten Electrons of Na, Mg, Al, and Si derived from the Homologous Spectra. L. A. Turner 67
Laue-Effect, Remarks upon Quantum Theory of. M. Bronstein 2304
,, , Diagrams of, obtained by Means of Monochromatic X-rays and Structure of Mother of Pearl. J. H. Shaxby 1118
Light Elements, Characteristic X-Rays from. (Miss) M. Levi 873
Lithium, Characteristic X-Rays from. G. K. Rollefson..... 2107
Long-Chain Compounds (II. Hydrocarbons), Further X-Ray Measurements on. A. Müller and W. B. Saville 1557

For the **Explanation** of this Index see p. 947.

X-Rays, *continued.* Abstract Nos.
Metallic Alloys, X-Ray Examination of. H. Lange 1763
Mixtures and Compounds, Determination by X-Ray Spectroscopy of Percentages by Weight of Various Elements in. R. Glocker and W. Frohnmayer 1418
Monochromatic X-Rays in Production of Laue Diagrams and on Structure of Mother-of-Pearl, Use of. J. H. Shaxby 1909
Multiple X-Ray Ionisation of Light Atoms, Energies of. L. A. Turner 2519
Periodic System, Theory of. A. Sommerfeld 1393
Phosphorescence Excitation by H.F. Radiation. E. Rupp 96
Photograms, X-Ray, Graphical Interpretation of. E. Schiebold 133
Photographic Film, Blackening of, by X-Rays. J. K. Robertson and J. T. Thwaites 833
Precision X-Ray Measurements by Powder Method. F. C. Blake 2516
Quantitative Analysis by X-Rays, New Method of. E. Delauney 2171
Radiation given out by Gases through which Electric Discharges are Passing. J. J. Thomson 1707
Recrystallisation, Investigation of , by Means of X-Rays. R. Glocker and E. Kaupp 369
Rectified Current, High-Power, at 500,000 Volts. J. Saget 1417
Reflection of X-Rays by Alkali Halide Crystals. Alice H. Armstrong, W. Duane and R. J. Havighurst 1907
,, of X-Rays by Barite. S. K. Allison 578
,, ,, from Quartz, Variation with Temperature of Intensity of, and its Bearing on the Crystal Structure. R. E. Gibbs 1660
,, ,, from Rock-salt, Influence of Temperature on Intensity of. R. W. James 1661
,, ,, in Pyrites. B. Davis and R. v. Nardroff 579
,, ,, , Quantum Theory of. W. Duane 1662
Refractive Index for X-Rays and Deviations from Bragg's Law of Reflexion. P. P. Ewald 367
Röntgen Rays, Reflection of. P. P. Ewald 1397
,, Spark-Spectra, Complex Structure of. G. Wentzel 1415
,, Spectrum of Multiply Ionised Molybdenum. M. Siegbahn and A. Larsson 577
Scattered Radiation due to X-Rays from Molybdenum and Tungsten Targets. S. K. Allison and W. Duane 1405
,, Röntgen Rays, Polarisation of. W. Bothe 1409
,, X-Rays, General Quantum Theory of Wave-length of. A. H. Compton 130
,, ,, , J. Transformation of. C. G. Barkla and S. R. Khastgir.. 1116
,, ,, , Ratio of Intensities of Unmodified and Modified Lines in. P. A. Ross 2712
,, ,, , Spectrum of, Effect of Surrounding Box on. A. H. Compton and J. A. Bearden 1403
Scattering of X-Rays. A. H. Compton and Duane 584
,, ,, . P. Debye 2104
,, ,, by Recoiling Electrons, Intensity of. Y. H. Woo..... 1408
,, ,, , J Phenomena and Quantum Theory of. R. T. Dunbar 1404
Secondary Electrons Produced by Hard X-Rays in Light Elements. H. Fricke and O. Glasser..... 876
,, X-Ray Spectra, Influence on, of Placing Tube and Radiator in a Box. S. K. Allison, G. L. Clark and W. Duane 576
,, X-Ray Spectra, Influence on, of Placing Tube and Radiator in a Box. Alice H. Armstrong, W. Duane and W. W. Stifler 575
Semi-optical Lines in X-Ray Spectrum. E. Bäcklin, M. Siegbahn and R. Thoraeus. L. de Broglie and A. Dauvillier 1905
Shielding Doublets of the Bowen-Millikan Ultra-violet Spectra. A. Unsöld.. 2711
Short Wave X-Ray Spectrograph and Some K-Series Emission Wave-lengths. J. M. Cork 1412
Smectic Substances and X-Rays. E. Friedel 1117
Solid Solutions of Potassium Chloride and Potassium Bromide, X-Ray Analysis of. T. Sasahara 2173
,, Targets, Visible Radiation from. P. D. Foote, W. F. Meggers and R. L. Chenault 351
Space-Groups, 230, Tabulated Data for Examination of, by Homogeneous X-Rays. W. T. Astbury and Kathleen Yardley 25
Spark Potential and Kathode Fall. H. Stücklen 189

For the **Explanation** of this Index see p. 947.

Abstract Nos.

X-Rays, *continued.*
Spectra, X-Ray. M. Siegbahn and R. Thoraeus 131
,, , ,, , Irregularity of La Doublet in. B. B. Ray 132
Spectral Frequencies in Region between Visible Light and X-Rays. F. Holweck 1664
Spectrograph, Seeman's, and Measurement of Normal X-Rays. A. P. Weber 1904
Steel, X-Ray Studies on Crystal Structure of. A. Westgren and G. Phragmén 469
Sulphur, Chemical Constitution and X-Ray Spectrum of. B. Ray..... 2716
Swelling in some Substances which give a Debye-Scherrer Diagram, X-Ray Spectrographic Researches on Existence of. J. R. Katz and H. Mark 129
,, ,, ,, ,, ,, ,, , Röntgen-Spectrographic Researches on Nature of. J. R. Katz and H. Mark 696
,, of Substances giving a Fibre-Diagram, Röntgen-Spectrographical Researches on Nature of J. R. Katz 951
Thin Films, Investigation of Properties of, by Means of X-Rays. W. Bragg.. 1414
Thorium, Determination of Ratio of Velocities of Two Groups of X-Rays from Active Deposit of. S. Rosenblum 1914
Tungsten X-Ray Emission and Absorption Spectrum with Vacuum Spectrometer, Investigation of. R. V. Zumstein 2106
Wave-lengths of Absorption Limits, Determination of. B. Walter..... 844
X-Radiation, Refractive Powers of Atoms for. H. Mark and S. Tolksdorf ... 2523
,, , Simple Experiment to Obtain Selective Effects in Dispersion of. H. Mark and L. Szilard 2521
,, , Superposed, Investigation of Absorption of. W. H. Watson ... 1665
X-Ray Apparatus, Simple, for Investigation of Crystals. H. Lange 1911
,, Constants, Measurements of. K. Lang 366
,, Diffracting Power of Crystal. W. Duane..... 2713
,, Emission from Metal Films. L. Simons..... 1122
,, Fluorescent Screens, Photometry of. L. A. Levy and D. W. West 2613
,, Generating Outfits, Oil Immersed, and their Uses. W. D. Coolidge .. 877
,, Intensities for Different Wave-lengths by Photographic and Ionisation Methods, Measurements of. R. Berthold and R. Glocker 1413
,, Intensity, Measurements of, by Ionisation Methods. L. H. Clark.. 1121
,, Laws in Field of Optics, Significance of Discovery of. R. A. Millikan and I. S. Bowen 1396
,, Lines, Intensity of. A. Sommerfeld 1394
,, Scattering, Mechanism of. A. H. Compton..... 2105
,, ,, , Theory of. O. Halpern 1115
,, Spectra of Certain Long-Chain Organic Compounds, Distribution of Intensity in. G. Shearer 2517
,, Spectra, Continuous, and Planck's Radiation Law. A. March..... 874
,, Spectrograph, Universal. A. Müller 2513
,, Spectrography and Metallurgy. H. Weiss..... 2301
,, Spectrum, Continuous, Theory of. M. Bronstein 2303
,, ,, , Effects of Working of Metals upon. E. Schiebold 875
,, Terms and Intensities. H. R. Robinson 2518
,, Tube Development, Modern. W. D. Coolidge 1910
,, ,, , New Shielded. Fauconnier 1113
X-Rays from Iron, Soft. C. H. Thomas 1659
,, in Crystals, Atomic Structure Factor in Intensity of Reflection of. D. R. Hartree 2020
,, in Industrial Control. H. Pilon 2302
,, of Great Wave-length. A. Nodon 1119
,, of Various Wave-lengths, Photographic and Ionisation Actions of. R. Berthold 1416
,, scattered by Molybdenum. P. A. Ross 2710
,, to detect Hidden Dangers in Plant Equipment. H. H. Lester, E. C. Herthel, W. Mendius and W. V. Ischie 25B
,, , Action of, on Certain Organic Ferments and Cells. Guilbert, R. Petit and M. Lemay..... 371
,, , Application of, to Study of Alloys. H. Weiss 2387
,, , Hard, Compton-Effect with. D. L. Webster and P. A. Ross 1906
,, , Recent Researches on : J Phenomenon. C. G. Barkla 365
,, , Soft, and Secondary Electrons. J. A. Becker 583

Zeeman-Effect and Radiation in an Electric or Magnetic Field.
Arc Spectra and Stark-Effect, Broadening of Lines in. H. Lowery..... 1878

For the **Explanation** of this Index see p. 947.

Abstract Nos.

Zeeman-Effect and Radiation in an Electric or Magnetic Field, *continued.*

Atomic Rays. G. C. Schmidt 98
Birefringence, Electrical, of Limonene. R. de Mallemann 2073
β-Rays of ThB + C, High-velocity, Magnetic Spectrum of. D. K. Yovanovitch and J. d'Espine 1105
,, , High-velocity, from Radium B + C, Magnetic Spectrum of. J. d'Espine 2110
Broadening of Spectral Lines and the Stark-Effect. M. Kimura and G. Nakamura 101
Carbon in Electric Field, Behaviour of Spark Lines of. S. Nakamura and Y. Fujioka 2292
" Dashed " and Displaced Terms in Spectra. A. Landé 110
Disturbance of Zeeman-Effect by Electric Fields. H. C. Urey 364
Intensities of Components in Zeeman-Effect. L. S. Ornstein and H. C. Burger 103, 363
Iodine Atom, Electromagnetic Sensitivity of. W. Steubing 2290
Irregular Zeeman-Effects in Multiplets of First Order. E. Back 2501
K-Series, Absorption Limits of. F. J. v. Wiśniewski 113
Magnetic Rotatory Polarisation, *see* section Polarisation.
Metal Arcs, Distribution of Electric Field and Stark-Effect in. H. Nagaoka and Y. Sugiura 850
Multiple Lines and their Zeeman Components, Intensity of. R. de L. Kronig 1879, 2283
Multiplets, Intensity of Zeeman Components of. W. C. van Geel 2695
,, , Quantum Theory of Structure of and Anamalous Zeeman-Effect. W. Heisenberg 2279
Neon, Zeeman-Effect of. E. Back 1099
Paschen-Back Effect. C. Runge 1084
Polarisation Experiment of Wood and Ellett, Theoretical Interpretation of. J. A. Eldridge 83
Polarised Resonance Radiation in Weak Magnetic Fields. R. W. Wood and A. Ellett 99
Radiating Atoms in Magnetic Fields. P. Zeeman 1901
Silver, Gold and Copper, Interrupted Arc Spectra, Pole Lines Occurring in. H. Lowery 851
Terms in Spectra, Classification of. W. M. Hicks 843
Tesla-luminescence Spectra. W. H. McVicker, J. K. Marsh and A. W. Stewart 115, 116
Ultra-violet Emission Spectra of the Halogens. E. B. Ludlam and W. West .. 114
Wave-lengths of Absorption Limits, Determination of. B. Walter 844
Zeeman Components, Intensities of. S. Goudsmit and R. de L. Kronig 2708
,, ,, , ,, . H. Hönl 1411
,, -Effect and Dependence of Electron-Mass on Velocity. W. Pauli, Jr. 1410
,, in Strong Magnetic Fields. P. Kapitza and H. W. B. Skinner 2502
,, Square Term in. A. Landé 1100
,, with Multiplets of Higher Degree. A. Landé 1106
,, , Intensities of Components in. L. S. Ornstein, H. C. Burger and W. C. van Geel 2101

For the **Explanation** of this Index see p. 947.

PRINTED IN GREAT BRITAIN
BY UNWIN BROTHERS, LIMITED
PRINTERS, LONDON AND WOKING

NAME INDEX.

Albrecht, E., 2674.
Allmand, A. J., 2799.
Anderson, S. H., 2733, 2741.
Andrews, W. S., 2688.
Athanasiu, G., 2672.
Auger, P., 2718.
Bailey, C. R., 2789.
Baly, E. C. C., 2749.
Bancroft, W. D., 2770.
Baxter, W. P., 2771.
Bechert, K., 2702.
Beekley, J. S., 2766.
Beckman, W. J., 2664.
Berliner, J. F. T., 2728.
Bhatnagar, E. S., 2752.
Blackburn, C. M., 2689.
Blondel, A., 2673.
Blunck, R., 2682.
Bouma, T., 2693.
Bowen, I. S., 2697.
Bramley, A., 2694.
Bray, W. C., 2791.
Bredig, G., 2725.
Breit, G., 2643.
Brewer, A. K., 2748.
Brown, F. C., 2760.
Buckingham, E., 2732.
Buckley, O. E., 2763.
Burt, R. C., 2803.
Burwell, Cora G., 2654.
Bury, C. R., 2723.
Cabannes, J., 2678.
Cain, J. R., 2783.
Caldi, A., 2734.
Campbell, T. P., 2800.
Cannon, Annie J., 2652.
van Cittert, P. H., 2703.
Chenault, R. L., 2696.
Clay, J., 2735.
Coblentz, W. W., 2659.
Cohen, E., 2782.
Coutts, J. R. H., 2773.
Cox, R. T., 2663.
Daudt, W., 2744.
Davies, C. W., 2798.
Davis, B., 2667.
Debye, P., 2772.
Desch, C. H., 2777, 2804.
Dhar, N. R., 2685.
Dorneich, M., 2674.
Duane, W., 2713.
Einstein, 2640.
Erickson, W. E., 2781.
van Everdingen, E., 2644.
Ewest, H., 2744.
Flechsig, W., 2754.
Foerster, F., 2801.
Foote, P. D., 2696, 2747.
Forbes, G. S., 2742.
Friauf, J. B., 2675.
Friend, J. N., 2775.
Frölich, P. K., 2802, 2807.
Gauger, A. W., 2793.
Gauzit, J., 2678.
van Geel, W. C., 2695.
Ghosh, R. N., 2687.
Giddings, G. W., 2745.
Girard, R., 2792.
Glasstone, S., 2795, 2796.
Gorbatschew, A., 2767.
Goudsmit, S., 2708.
Graber, M. E., 2665.
Green, J. B., 2698, 2700.
Güntherschulze, A., 2739, 2740.
Hall, E. H., 2751.
Hammond, D. W., 2775.
Hara, R., 2788.
Harle, J. A., 2779.
Harmon, F. G., 2774.
Harrison, G. R., 2683, 2699, 2742.
Hartig, H. E., 2750.
Hatfield, W. H., 2784.
Havighurst, R. J., 2714, 2715.
Hertz, G., 2706.
Heymans, P., 2666.
Hogness, T. R., 2746.
Hönl, H., 2690.
Hubbard, J. C., 2663.
Humason, M. L., 2654.
Hund, F., 2692.
Ippisch, 2727.
Itiki, S., 2660.
Jablonski, A., 2662.
Jensen, A. G., 2759.
Jones, E. R., 2723.
Jordan, P., 2640.
Kahlenberg, H. H., 2808.
Kahlenberg, L., 2808.
Kennedy, R. J., 2722.
Kennelly, A. E., 2761.
Kirst, L. A., 2781.
Koch, P. P., 2682, 2686.
Kockel, L., 2757.
Kretchmar, G. G., 2741.
Kronig, R. de L., 2708.
Krynitsky, A. I., 2778.
Kurtz, C. M., 2780.
Lamb, H., 2645.
Lange, Luise, 2756.
Ledig, W., 2671.
Lemon, H. B., 2689.
Lepape, A., 2717.
Lenz, H., 2755.
Lewis, G. N., 2726.
Lewschin, W. L., 2731.
Lindsay, R. B., 2639.
Livingston, R. S., 2791.
Loebe, W. W., 2671.
London, F., 2690.
Loring, F. H., 2658.
Lunn, E. G., 2746.
Luyten, W. J., 2655.
McKeehan, L. W., 2763, 2764.
McMahon, A. M., 2760.
Mallik, D. N., 2642.
May, O. E., 2728.
Mehl, R. F., 2785.
Merrill, P. W., 2649, 2654.
Merritt, E., 2661, 2753.
Michalek, J. C., 2721.
Millikan, R. A., 2697.
Mitchell, A. C. G., 2787.
Mitra, N. G., 2752.
Miyazaki, T., 2736.
Moesveld, A. L. T., 2782.
Mohler, F. L., 2747.
Mulliken, R. S., 2707.
Naish, W. A., 2786.
Nechvile, V., 2646.

[Continued at foot of page 4 of Cover.

If you Want

A HIGH VACUUM

Write for Particulars of

The Geryk Vacuum Pump

(FLEUSS PATENT).

Large or small pumps give
:: equally good results ::

Write for List No. 1023.

Pulsometer Engineering Co. Ltd

11 Tothill Street, LONDON, S.W. 1.

Nine Elms Ironworks, READING.

NAME INDEX—*continued.*

du Noüy, P. L., 2769.
Noyes, A. A., 2771.
Oudt, F. W., 2664, 2709.
Pauling, L., 2730, 2772.
Peschard, M., 2762.
Petersen, M., 2700.
Petersson, J. H., 2648.
Phelps, E. R., 2701.
Pienkowski, S., 2662.
Pokrowski, G. I., 2679.
Prasad, M., 2752.
Puri, V. S., 2799.
Raman, C. V., 2677.
Ramdas, L. A., 2677.
Rawdon, H. S., 2778.
Ray, B., 2716.
Reps, Schmidt-, H., 2670.
Riding, R. W., 2749.
Rodebush, W. H., 2721.
Ross, F. E., 2680.
Ross, P. A., 2710, 2712.
Rosseland, S., 2650.
Rouse, G. F., 2745.
Rousseau, G. A., 2681.
Ruark, A. E., 2691.
Samson, C., 2737.
Sandeman, I., 2705.
Sanyal, R. P., 2685.
Schalén, C., 2647.
Schmick, H., 2719.
Schreiner, E., 2794.
Schroeter, F., 2738.
Schwarz, C., 2720.
Sekiguti, R., 2660.
Shikata, M., 2805.
Shrivastava, D. L., 2752.
Sinozaki, H., 2788.
Slater, J. C., 2699.
Sleator, W. W., 2701.
Smart, W. M., 2651.
Smith, R. C., 2790.
Sommer, L. A., 2702.
Speller, F. N., 2774, 2776.
Stern, O., 2724.
Strömberg, G., 2653, 2657.
Sutton, H., 2806.
Swann, W. F. G., 2641.
Taguti, T., 2660.
Takamine, T., 2696.
Tanaka, T., 2704.
Taylor, H. S., 2766.
Teichmann, L., 2725.
Thornton, W. M., 2779.
Tolman, R. C., 2730.
Trobridge, G. W., 2775.
Ulich, H., 2758.
Unsöld, A., 2711.
Valle, G., 2669.
Vanoni, E. P., 2765.
Vellan (Mrs.) E. M., 2804.
Vogler, H., 2686.
Walker, R. B., 2743.
Weiser, H. B., 2768.
Westman, A. E. R., 2743.
Wien, M., 2797.
Wigand, A., 2676.
Wilsey, R. B., 2684.
Wintner, A., 2656.
Woronkoff, G. P., 2679.
Zaumeyer, R. J., 2780.
Zwikker, C., 2668.

UNWIN BROTHERS, LIMITED, THE GRESHAM PRESS, LONDON AND WOKING.